

## Hatchery Operations and Maintenance

Hatchery Operations and Maintenance		2004 Actual	2005 Enacted	Uncontrollable & Related Changes (+/-)	Program Changes (+/-)	2006 Budget Request	Change from 2005 (+/-)
Hatchery Operations	\$(000) FTE	39,014 397	37,767* 455	+796	+2,111	40,990 455	+3,223 0
Hatchery Maintenance	\$(000) FTE	18,979 62	18,987 0	+113	-2,120	16,980 0	-2,007 0
<b>Total, Hatchery Operations &amp; Maintenance</b>	<b>\$(000) FTE</b>	<b>57,993 459</b>	<b>56,754* 455</b>	<b>+909</b>	<b>-9</b>	<b>57,970 455</b>	<b>+1,216 0</b>

\*This reflects a technical adjustment to reconcile to the Department of the Interior's support table.

### Program Overview

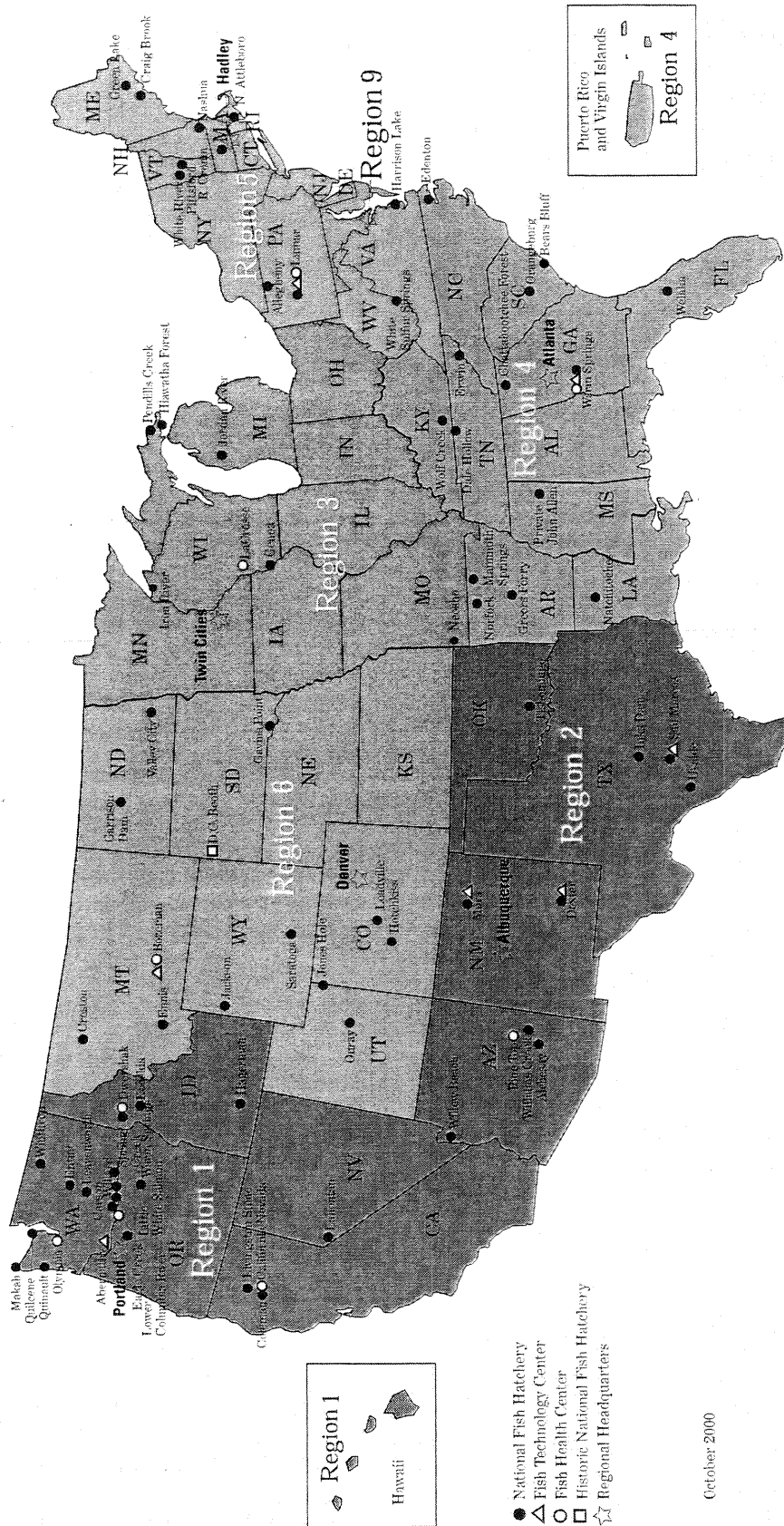
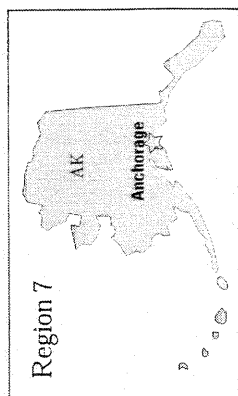
As the only Federal hatchery system, the National Fish Hatchery System (NFHS) works with partners to restore and maintain fish and other aquatic resources at self-sustaining levels, and to support Federal mitigation programs for the benefit of the American public.

The NFHS is comprised of 69 operational National Fish Hatcheries (NFH's), 7 Fish Technology Centers (FTC's), 9 Fish Health Centers (FHC's), and 1 historic NFH.

The NFHS is the national leader in many aspects of aquatic species culture and broodstock management, especially for imperiled species. Innovation and continual adaptation to new and evolving needs have enabled the NFHS to pioneer fish culture techniques for a variety of imperiled species such as Apache trout, Atlantic sturgeon, pallid sturgeon, bonytail, Colorado pikeminnow, and razorback sucker, amongst many. The System's diversity of fish propagation facilities and expertise also helps the Service contribute to cooperative, ecosystem-based projects that recover aquatic species other than fish, such as endangered native mussels, the Wyoming toad, and Texas wild rice. NFHS facilities also serve local communities by providing public educational programs in aquatic resource conservation.

For the past several years, NFHS employees have worked collaboratively with the Department, OMB, GAO, the Sport Fishing and Boating Partnership Council and many other outside partners to improve NFHS programs and management practices, advance the objectives of the President's Management Agenda, and promote the Secretary's 4 C's: conservation through cooperation, communication, and consultation. Significant emphasis has been placed on budget and performance integration. In addition, the NFHS is committed to implementing the Department's Strategic Plan and the Fisheries Vision, developed in close collaboration with the Program's many partners and stakeholders, with encouragement from the Senate and House Interior Appropriations Committees, as well as support from the Secretary of the Interior and the OMB.

# National Fish Hatchery System Facilities



October 2000

### Use of Cost and Performance Information

In carrying out the Service's mission of working with others to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people, and to achieve the Fisheries Program's mission goals, the NFHS has made substantial progress toward linking program and fiscal management with performance. The NFHS and its partners and stakeholders have been actively involved in the Fisheries Program's Regional and National strategic planning process. These strategic plans include performance targets developed in conjunction with the Department during the Administration's Program Assessment and Rating Tool (PART) process that link to the DOI Strategic Plan. Specifically, the NFHS has taken the following actions:

- Baseline data for all performance measures were reported in FY 2004.
- Working with DOI, OMB, and the Endangered Species Program, the Fisheries Program developed a new Program outcome measure ("% of threatened and endangered aquatic species populations, prescribed as necessary in Recovery Plans, that become self-sustaining in the wild") and set the FY 2008 target level baseline.
- The Fisheries Program's Fisheries Information System (FIS) has been substantively modified to capture and track critical performance data with the addition of the Plans and Populations Modules. FY 2004 was the first year that all NFHS performance measures were collected by, and reported from, the FIS Accomplishments Report Module.
- NFHS personnel worked closely with Department and other Service Planning and Evaluation staff to develop a standard set of work activities and output costs, to implement Activity-Based Costing/Management in FY 2004. ABC/M will allow the NFHS to allocate costs associated with program performance goals and DOI Strategic Plan goals to better align budget with performance.
- In FY 2004, NFHS personnel worked closely with DOI and OMB as it underwent its second PART review. Preliminary findings show that the NFHS has made significant progress in improving its program purpose and design, strategic planning, program management and program results/accountability.
- By the end of FY 2005, all NFHS facilities will have implemented SAMMS, the Service adaptation of the Department's standardized facilities maintenance management system. Once fully operational, SAMMS will improve maintenance scheduling, comprehensive budget planning, and maintenance accomplishment reporting.
- NFHS personnel are working with the Sport Fishing and Boating Partnership Council (SFBPC) to develop protocols for regular, independent evaluations of the Fisheries Program as it implements the Fisheries Strategic Plan. The SFBPC Team began its evaluation of the Fisheries Program in Fall 2004 and their report is scheduled for completion in March 2005.

## Hatchery Operations

### Program Overview

#### Aquatic Species Conservation and Management

The NFHS is a key contributor to accelerating the recovery of aquatic species listed under the Endangered Species Act (ESA) and proactive restoration of aquatic species where populations are declining, to preclude the need for listing. The NFHS's primary role in aquatic species conservation and management is the production of healthy and genetically appropriate animals and plants to re-establish wild populations. Fish Technology Centers (FTCs) and Fish Health Centers (FHCs) support habitat investigations and provide the scientific foundation for recovery and restoration programs. NFHS recovery and restoration activities are conducted in coordination with State, Federal, Tribal, and private sector partners as prescribed by Recovery Plans and multi-entity fishery management plans. These activities support the Department of the Interior's Strategic Plan resource protection goal to sustain biological communities on DOI managed and influenced lands and waters in a manner consistent with obligations regarding the allocation and use of water.

**Recovery of Species Listed Under the ESA** - The NFHS will implement tasks prescribed in Recovery Plans to accelerate the recovery of listed fish such as Pacific and Atlantic salmon, cutthroat trout species, a number of Southwestern endemic species, inland and coastal sturgeon species, mollusks, amphibians, and aquatic plants. Such tasks include reintroduction of organisms into restored habitats, establishment and maintenance of refugia and enhancement or development of propagation and population monitoring techniques. All NFHS programs are coordinated with other Federal, State, and Tribal partners.

Recovering and managing listed aquatic species to self-sustaining levels involves a complex network of programs that address current threats to habitat as well as to the species themselves. Recovery programs address these threats by restoring habitat and supplementing native fish with artificially propagated but genetically fit fish where necessary to ensure the survival of the species or population. As the only Federal hatchery system, the NFHS makes substantial contributions to these outcomes, which are measured by the NFHS' success in accomplishing NFHS-specific tasks identified in Recovery Plans.

The Gila trout, an endangered species once widespread in the upper Gila River Basin of New Mexico, has battled competition and hybridization with non-native salmonids, and habitat destruction and degradation. Natural catastrophic events such as fire and subsequent ash flows and alterations of habitat have exacerbated conditions for the Gila trout. The objective of the Gila trout recovery plan is to reestablish populations of Gila trout throughout its native range through habitat restoration and reintroduction of captively-reared fingerlings. The Mora NFH & FTC (NM) plays a vital role in Gila trout recovery by providing temporary refugia for fish jeopardized by fires, refining captive propagation techniques, and producing captively-bred fish for reintroduction. The Alchey-Williams Creek NFH (AZ) will continue to work with the Mora NFH & FTC and other NFHS facilities to develop and employ natural rearing techniques, which encourages wild behavior and improves survival. Genetic analysis of remnant populations at Mora has provided crucial information that has aided in recovery of genetically diverse and healthy populations. Captive propagation in concert with habitat restoration has been successful in restoring this native trout to historic habitat and Gila trout recovery is imminent, provided additional fires do not impact the recovery sites.

The NFHS contributes to the recovery of four federally endangered sturgeon species (pallid, Kootenai white, shortnose, & Alabama), one federally threatened sturgeon species (Gulf), as well as depleted

populations of lake, Atlantic, and shovelnose sturgeon. Eighteen NFHS facilities, working in concert, play leadership roles in sturgeon recovery efforts nationwide. Contributions to the recovery of these highly migratory and long-lived fish include maintaining genetically distinct broodstock populations, developing and refining captive propagation techniques, stocking captively-reared sturgeon into restored habitat, developing methods to identify and track habitat preference, and other activities prescribed in approved Recovery Plans. Fish Technology Centers and Fish Health Centers provide the science support necessary to successfully implement sturgeon propagation programs. For example, cryogenic techniques for gamete preservation, developed at the Warm Springs Regional Fisheries Center (GA), have increased production efficiency by reducing the need for maintaining captive broodstocks and for collecting wild fish in a limited time frame. Sperm is collected at convenient times, then frozen for use as needed. This technology also facilitates the NFHS's ability to implement genetic management plans, permitting use of a supply of known genetic material. The NFHS coordinates its efforts with other Federal, and State and Tribal partners nationwide. Habitat restoration is a key to the long term success of any propagation program, and the NFHS works closely with its partners to identify key habitat for restoration, enhancing survival and recovery.

Currently, the NFHS is helping complete tasks specified in approved Recovery Plans for 59 species (42 fish species and 17 molluscan, amphibian, and plant species).

Nearly 3/4 of all ESA Recovery Plans (56 plans, covering 72 species) for fish recommend developing or using captive propagation technology or refugia as part of recovery plan "strategies" to re-establish wild populations. These tasks are accomplished at NFHS facilities.

Table 1. Number of imperiled species and populations addressed by the NFHS as of December, 2004.

	Fish Species & Populations	Other Aquatic Species
Endangered	30	15
Threatened	12	2
Candidate	3	2
<b>Total</b>	<b>45</b>	<b>19</b>

**Restoration of Depleted, but Non-Listed Species** - The NFHS focuses on restoration projects to enhance recreational fishing opportunities through 1) production and stocking of healthy, genetically appropriate animals to re-establish wild populations; 2) providing technical support in areas such as biometrics and genetics; 3) providing disease management and diagnostics; and 4) providing support of habitat restoration.

The Service is committed to this multi-faceted approach and will coordinate with State, Tribal, Federal, and private sector partners at every level of the restoration process, under the guidance of multi-partner fishery management plans and other restoration plans. The NFHS's performance in restoring depleted native species not yet listed under the ESA is measured by accomplishment of specific tasks identified in fishery management plans. In FY 2004, the NFHS accomplished 91% of the NFHS-related production tasks prescribed by fishery management plans. The NFHS will continue to develop fish culture technologies, conduct fish health assessments and diagnostics, and produce healthy, genetically fit fish as identified in fishery management plans. Collectively these activities will help restore and maintain fish such as lake trout, paddlefish, coaster brook trout, American shad, and other aquatic species, to self-sustaining levels.

As an example, lake trout populations in the Great Lakes once supported major fisheries. The resource collapsed in the 1940's and 1950's due to the invasion of sea lamprey, overfishing, and environmental degradation. Implementation of a lake-wide lake trout restoration plan did not start until 1985. Optimally, the first wild spawners produced under this plan would appear between 1998 – 2003 with the target number of wild spawners expected to be reached between 2005 – 2010. The importance of this restoration program has underscored the 2002 US vs. Michigan Consent Decree, which required, among other mandates, that the Service contribute an additional 1.2 million yearlings to help restore lake trout populations in Lakes Michigan and Huron. In FY 2004, Iron River NFH (WI) increased its production by 15% in response to the Decree. All stocked lake trout are coded wire tagged (CWT) or fin clipped for identification in studies to evaluate movement, fish quality, genetic performance, and restoration programs to improve and accelerate restoration of this valuable fishery.

### **Aquatic Habitat Conservation and Management**

The NFHS contribution to cooperative habitat conservation efforts is multi-faceted. Some activities directly improve habitats by providing whole plants or propagules for habitat restoration. Other projects provide “explorer” or “research” fish to help determine habitat preference or requirements of various imperiled species. Additional NFHS projects provide for a cleaner environment by developing and adopting innovative technology to meet EPA water effluent standards. Furthermore, the National Wild Fish Health Survey monitors actual habitat health that affects wild aquatic animals. In FY 2006, the NFHS will continue these and similar contributions to cooperative habitat conservation efforts. NFHS will target projects that improve physical environments to enhance survival of self-sustaining native fish, evaluate effectiveness of fish passages, reduce effluents from NFH's, and restore natural habitat to be used as refugia.

For example, the NFHS's nine Fish Health Centers have been conducting the National Wild Fish Health Survey, utilizing state-of-the-art technology to confirm presence/absence of disease in freshwater and seagoing fish, to prevent the spread of aquatic pathogens for improved aquatic ecosystem management.

These activities contribute toward the DOI's Strategic Goals for 1) resource protection to improve health of watersheds and landscapes that are DOI managed or influenced; 2) the intermediate outcome strategy to restore and maintain proper function to watersheds and landscape and to sustain biological communities on DOI influenced lands and waters; and 3) the intermediate outcome strategy to create habitat conditions for biological communities to flourish.

### **Cooperation with Native Americans**

The NFHS helps the Service meet the DOI's Goal to safeguard lives, property and assets, advance scientific knowledge, and improve the quality of life for the communities we serve and the DOI's end outcome goal to fulfill Indian fiduciary trust responsibilities by providing fish and wildlife assistance to Native American Tribes. The NFHS will continue to play a major role in FY 2006 and beyond to help the Service fulfill Tribal Trust Responsibilities and build Tribal partnerships to assist with restoration of native species that are important to the Tribes both on and off Tribal lands.

The Service has a long history of fulfilling Indian Tribal Trust Responsibilities by providing subsistence fish species to Treaty Tribes. Today, this relationship has evolved beyond food fish production to economic assistance involving Tribal aquatic resources. The NFHS provides management assistance to help Tribes re-establish and maintain native fish populations on Tribal lands. Species like the threatened Apache trout and Chinook and Coho salmon are important cultural resources. In FY 2006, the NFHS will continue its commitment to fulfilling Tribal Trust Responsibilities.

**Partnerships and Accountability**

**Strategic Planning** - In 2003, the Fisheries Program in each Service Region developed a 5-year implementation plan in consultation with its partners and stakeholders. These plans contain measurable, Region-specific goals and commitments for implementing the Fisheries Vision. Regional goals and performance targets are being merged in a National Fisheries Program Strategic Plan that will improve national program management and budget performance integration.

In FY 2005, a national workgroup will be established to examine the Fisheries Program's performance measures and definitions as part of an effort to improve the ability of the Fisheries Information System (FIS) to accurately collect and represent Program operations and accomplishments. In FY 2006, NFHS personnel will be actively involved in implementing a web-based version of the FIS, which will provide very powerful, real-time data management capability.

**Program Assessment Rating Tool (PART) Review** – Results of the NFHS PART assessment of FY 2004 indicated that the program needed to address issues concerning its mission, program design, performance measures, and several specific issues. The Service and NFHS have implemented a series of actions in response to the NFHS PART Findings:

- *Adopt the mission statement and goals developed during the assessment process* – The mission statement was shared with partners and adopted by the program. Regional and National strategic plans include goals, performance measures, and ambitious performance targets. Additionally, the Fisheries Program is updating its Fisheries Information System to improve the capability and accuracy of performance target data and reporting measurable results, both of which are crucial to full implementation of performance-based budgeting.
- *Schedule periodic strategic planning and program result evaluations* – In FY 2004, in conjunction with the Service Director and OMB, the Sport Fishing and Boating Partnership Council convened an Evaluation Team comprised of representatives from a broad spectrum of Fisheries Program stakeholders, including the Colorado Division of Wildlife, the Northwest Indian Fisheries Commission, Trout Unlimited, the American Sportfishing Association, the International Association of Fish and Wildlife Agencies, and the Coastal Conservation Association. With no suitable model for the comprehensive evaluation of a natural resource program, OMB worked closely with the Team and the Fisheries Program to define the process, protocols, and substance for the Fisheries Program evaluation. The evaluation is well underway, and an evaluation report is scheduled for completion in March 2005.
- *Link individual employee performance plans with goal-related performance targets for each fiscal year* – Service Regions are including responsibilities for specific performance targets in annual personnel performance plans of each Regional Fisheries supervisor down to the project leader level.
- *Implementing Activity-Based Costing to help allocate and associate costs with specific performance measures* – Activity-Based Costing was implemented throughout the Service beginning in FY 2004. In FY 2005, ABC information will be used to allocate costs associated with program performance goals and DOI Strategic Plan goals to better link budget and performance information.
- *Seek reimbursement for mitigation production programs* – In its reports *Saving a System in Peril* and *A Partnership Agenda for Fisheries Conservation*, the Sport Fishing and Boating

Partnership Council was very clear with its recommendation that costs to mitigate for the loss of fisheries as a result of Federal water projects must be recovered from sponsors of those water projects. The Administration supports full cost-recovery for mitigation activities as authorized in law and carried out by the NFHS.

Throughout 2004, the Service conducted an exhaustive search for legislation and/or documentation of mitigation requirements for Bureau of Reclamation water projects, and analyzed its findings in conjunction with DOI's Office of Policy Analysis and the Bureau. Decision makers at the highest level of both the Service and the Bureau continue to strive for agreement on remaining issues that will set the standards for resolution of mitigation issues with agencies outside of DOI.

### **Leadership in Science and Technology**

**Science and Technology** - The Service's Fish Technology Centers (FTCs), Fish Health Centers (FHCs), and the Aquatic Animal Drug Approval Partnership (AADAP) Program provide scientific and technical leadership to solve "on the ground" hatchery and fishery management problems that can make or break restoration and recovery programs, as well as mitigation programs. Their accomplishments contribute to DOI's Resource Protection Goals To Sustain Biological Communities on DOI Managed and Influenced Lands and Waters in a Manner Consistent with Obligations Regarding the Allocation and Use of Water and the intermediate strategy of Improve Information Base, Resource Management Practices, and Technical Assistance. Over the years, contributions in genetic analyses, nutrition, population dynamics, cryopreservation, biometrics, culture technologies, disease diagnostics, and new approved drugs have improved the quality and relevance of both hatchery production programs and broader fisheries management activities. The FTC's, FHC's, and AADAP will continue to advance science and technology and provide vital support to hatchery and fisheries management activities in FY 2006.

For example, personnel from the Bozeman FTC (MT) and the U.S. Department of Agriculture are conducting an ongoing study to increase palatability of diets used to reduce fin erosion in trout. The California/Nevada FHC (CA) utilizes state-of-the-art molecular diagnostic tools to expand the capabilities of the national fish health program, and developed improved testing techniques for Bacterial Kidney Disease of trout and salmon. These projects, and other work conducted by the NFHS will result in healthier, robust fish for restoration and recovery initiatives.

**Fish Health** - Increasingly, the Service's Fish Health Centers are being called upon to play national and international leadership roles with partners such as the American Fisheries Society's Fish Health Section, NOAA Fisheries, the Department of Agriculture's Animal and Plant Health Inspection Service, and the State Department. The NFHS's current fish health program is focused on: 1) aquatic animal drug approval; 2) whirling disease research; 3) the National Aquatic Animal Health Plan and Service's Aquatic Animal Health Policy; 4) the National Wild Fish Health Survey (NWFHS); and 5) general aquatic animal health support activities for Service facilities (e.g. hatchery inspections).

The AADAP (Bozeman, MT) is a partner-based national program established by the NFHS in 2003 that provides multi-agency coordination for efforts to obtain Food and Drug Administration approval for aquatic animal therapeutants. These drugs are critical to maintaining the health and fitness of aquatic species in captivity. This partnership, led by the Service, spreads the otherwise prohibitive cost of the applied research and development needed for FDA approval among the States, Tribes, and private aquaculture community, and enables the generation of large, consolidated data packages for submission to FDA. In FY 2006, the AADAP will complete application to FDA for approval of two



additional drugs (from the list of 8-12 prospective drugs) necessary for healthy fish production. The AADAP will continue to coordinate multi-agency efforts to meet this important need, including the generation and submission of critical data, dissemination of complete and up-to-date drug-use information to all user groups, and administration of species exemptions which allow use of investigational drugs and generation of essential data.

Since 1996, the NFHS has been working with its partners from the States, non-governmental organizations, and universities to combat whirling disease, which is currently funded under the Fish and Wildlife Assistance program element. Funding has been matched two-fold by in-kind contributions from these partners, resulting in development of a large, diverse, talented, and coordinated consortium. These combined efforts have expanded the knowledge of the disease, its causative agent, and the agent's hosts (salmonid species and tubifex worms). Activities have raised awareness of the disease and increased support needed to study it throughout affected States. These efforts will continue in FY 2006, as will efforts to identify potential management solutions.

The NFHS will cooperate with the USDA, the Department of Commerce, State and Tribal natural resource agencies, and private aquaculture entities to implement the Federal Joint Subcommittee on Aquaculture's National Aquatic Animal Health Plan (NAAHP). It will establish and implement import health certification protocols to address emerging interjurisdictional disease issues that pose potential catastrophic damage to native aquatic species. Two recently discovered fish viruses that likely could have been excluded from our country had the NAAHP been in place are the Largemouth Bass virus and the Spring Viremia of Carp virus, both of which have potential to cause severe losses in native recreational and/or endangered species populations.

The NFHS will implement the newly revised Service Aquatic Animal Health Policy (AAHP) to ensure that a fish health component is included in fishery management plans; in particular those plans addressed in the joint FWS/National Marine Fisheries Service policy regarding controlled propagation of species listed under the *Endangered Species Act*. The AAHP includes a state-of-the-science risk assessment tool to help managers make more informed decisions relative to the movement of aquatic species for which there is little information.

The NWFHS is a dynamic fishery management tool initiated in FY 1997 to provide information on pathogens in free-ranging fish and improve aquatic resource management. Currently funded under the Fish and Wildlife Assistance program element, data generated by FHCs for the NWFHS are critical to the success of restoration, recovery, and mitigation programs in at least 44 States. Samples from 193 species have been analyzed to better formulate restoration, recovery, and resource management plans for several imperiled fish species, including bull trout, greenback cutthroat trout, Atlantic salmon, pallid sturgeon, Gila trout, and Ozette sockeye salmon. To support the President's Management Agenda for expanded E-government, the NWFHS database has been Internet accessible to partner agencies and the public since September 2001 (<http://wildfishsurvey.fws.gov>).

#### **Public Use**

**Recreation** - Restoration of depleted populations of native game fish by the NFHS provides and enhances recreational fishing opportunities for the nation's 58 million recreational anglers. These activities support the DOI's Recreation Goal to Provide for a Quality Recreation Experience, Including Access, and Enjoyment of Natural and Cultural Resources on DOI Managed and Partnered Lands and Waters, and by indirectly supporting the DOI's Recreation Goal to Enhance the Quality of Recreation Opportunities. The NFHS will continue these activities in FY 2006.

Historically, most of Lake Superior's 3,000 miles of shoreline and 100 tributaries supported fishable populations of coaster brook trout, a highly desirable recreational species. Over-harvest and habitat

loss decimated the populations until only remnant stocks remained. Using river specific broodstocks developed by the NFHS, the Service is reestablishing coaster brook trout populations in Siskiwit Bay and Isle Royale National Park (MI) in partnership with the National Park Service, the Keweenaw Bay Indian Community, the Michigan Department of Natural Resources, and Trout Unlimited.

**Mitigation** - When Federal locks and dams were constructed, Congress and the Federal government committed to mitigate impacts on recreational, commercial, and Tribal fisheries. The Service supports mitigation fishery programs through the NFHS to address the adverse impacts of some of these projects. NFHS fish production for mitigation in the Southeast is estimated to generate more than \$107 million annually in direct expenditures on recreational fishing activities and to maintain more than 2,800 jobs. NFHS efforts in this area support the DOI's Recreation Goal to Provide Recreation Opportunities for America that would otherwise not exist due to environmental impacts of water resource development projects.

Over the years, many project-specific authorities have led to a myriad of mechanisms and responsibilities for funding and operating Federal mitigation fisheries. In some cases Federal water project development agencies or the beneficiaries of those Federal projects fund mitigation costs. The Service currently expends approximately \$34 million annually for fishery mitigation activities. Approximately 2/3 of these costs are reimbursed by the responsible water development agency. The Service's fishery mitigation roles and responsibilities remain a major issue in the development of a collaborative strategy for the Service's Fisheries Program. Operating under program priorities established in the Draft Fisheries Program Strategic Plan and *Vision*, the Service will honor its commitments to mitigate the adverse effects of Federal water development projects while focusing on native fish recovery and restoration, and meeting the expectations from our program stakeholders to work towards reimbursement by responsible agencies.

### **2004 Program Performance Accomplishments**

With the \$39 million appropriated for operations in FY 2004, the NFHS contributed to several goals outlined in the Fisheries *Vision*. Important 2004 accomplishments include:

#### **Partnerships and Accountability**

In FY 2004, the NFHS substantially improved its linkage of program and fiscal management with performance. Specifically, the NFHS has taken the following actions:

- Completed strategic plans in each Service Region to implement the Fisheries Program's *Vision for the Future*. These strategic plans include ambitious performance targets developed in conjunction with the Department, OMB, and Program partners, and link to the DOI Strategic Plan.
- Established baseline data for all performance measures based on FY 2004 accomplishment reports, including data on a new Fisheries Program outcome measure developed with DOI, OMB, and the Endangered Species Program ("Percent of threatened and endangered aquatic species populations, prescribed as necessary in Recovery Plans, that are self-sustaining in the wild").
- Developed the Fisheries Information System (FIS) into an efficient and effective management tool. By implementing the Plans and Populations Modules, FIS seamlessly links performance measures and targets specified in the Fisheries Program Strategic Plan, the DOI Strategic Plan, and Recovery and Fishery Management Plans with project completion data, information on the status and trends of aquatic populations, and near- and long-term needs for budget and workforce changes. This system has greatly improved the accuracy of the program's planning, budget, and performance processes.

- Implemented Activity-Based Costing/Management with the Department and other Service Planning and Evaluation staff by developing a standard set of work activities and output costs to align project costs program performance goals and DOI Strategic Plan goals.
- Completed a second PART review with OMB and the Department. Preliminary findings indicate that the NFHS has made significant progress in improving its program purpose and design, strategic planning, program management and program results/accountability.

### **Aquatic Species Conservation and Management**

The original Pyramid Lake, Nevada, population of Lahontan cutthroat trout was extirpated in the 1940's. To recover the species, the Lahontan NFH (NV) conducted genetic research in 1996 to determine origins of out-of-basin transplants that were believed to have originated from Pyramid Lake. Results from the genetics work indicate that this strain originated from the Truckee River Basin and was appropriate to use for recovery of the Pyramid Lake population. Concurrent to the genetic work, Lahontan NFH began to develop a broodstock of the Pilot Peak strain of Lahontan cutthroat trout. Under a cooperative agreement with a local land owner, the State of Utah, and Bureau of Land Management, three earthen ponds were utilized to hold genetically appropriate wild fish in FY 2004. Lahontan NFH now has three year classes from which to develop a broodstock. Currently the hatchery is improving techniques to successfully raise and propagate this strain in a captive environment for recovery purposes.

Southwestern native fishes have been greatly impacted by river and stream perturbations (dams and diversions), water extraction for irrigation and mining, competition with non-native fishes and other invasive species, and detrimental land use practices. In many instances, these threats are compounded by drought and/or fire. As part of the overall strategy to protect the species, fishery managers look to the NFHS to hold certain populations in refugia until conditions improve in the wild. In May 2004, 30 endangered Gila trout of the Spruce Creek lineage were rescued from Raspberry Creek (AZ) during a fire and held in refugia at Mora NFH & FTC (NM). These fish will be returned to the wild after the habitat is sufficiently stable to sustain this unique salmonid.

Paddlefish are one of the largest freshwater fish species found in big rivers in North America. Unfortunately, over-harvesting and habitat degradation have caused steady decline of this species over most of its natural range, and at one time it was proposed for listing under the ESA. To prevent paddlefish from declining to the point of being listed, the NFHS is working with States, Tribes, and NGO's to implement the Paddlefish Management Restoration Plan that calls for hatcheries to provide a variety of propagation and scientific activities, including genetics management, improving methods of spawning, culturing, nutritional testing and rearing, and tagging and stocking. In FY 2004, Gavins Point NFH (SD) propagated and stocked 5,000 fingerling paddlefish in the Missouri River Drainage. In the Southeast, Private John Allen NFH (MS) produced over 16,000 paddlefish fingerlings for restoration activities in the Mermentau River in Louisiana, and an additional 400,000 fry and fingerlings for cooperative research in restoring populations in the Tenn-Tom Waterway. In the Southwest Region, Inks Dam (TX) and Tishomingo (OK) NFHs propagated and stocked 2,100 paddlefish in Lake Texoma on the Red River and 24,500 tagged paddlefish into the Red River above Denison Dam, respectively.

In FY 2004, NFHS facilities distributed approximately 139,000,000 fish weighing approximately 5,100,000 pounds, and approximately 126,000,000 eggs to restoration, recovery, mitigation, and special conservation programs (see Table 2).

Table 2. FY 2004 and FY 2005 Fish and Fish Egg Distribution\*

	Number of Fish	Pounds of Fish	Number of Eggs
<b>FY 2004 Actual</b>			
Recovery	10,298,118	239,717	7,930,190
Restoration	28,973,560	724,883	23,551,813
Mitigation	63,245,636	3,413,033	61,427,508
Special Conservation	36,692,508	748,338	33,390,136
<b>TOTAL</b>	<b>139,209,822</b>	<b>5,125,917</b>	<b>126,299,647</b>
<b>FY 2005 President's Budget</b>			
Recovery	11,000,000	250,000	8,000,000
Restoration	30,000,000	750,000	25,000,000
Mitigation	63,000,000	3,400,000	61,000,000
Special Conservation	35,000,000	700,000	32,000,000
<b>TOTAL</b>	<b>139,000,000</b>	<b>5,100,000</b>	<b>126,000,000</b>

\*Fish and Fish Egg Distribution are outputs related to higher level performance goals and measures. The 2004 estimates are based on historical levels, adjusted for the proposed 2004 budget. These outputs are not goals, and actual distribution will depend on implementation of higher level goals.

**Recovery:** (Sustain biological communities)

Activities contributing to down-listing or de-listing Federally endangered or threatened species.

**Restoration:** (Sustain biological communities)

Activities contributing to re-establishing self-sustaining native populations at levels of abundance and spatial distributions well above the threshold for de-listing or listing.

**Mitigation:** (Ensure quality of recreation)

Activities contributing to offsetting aquatic resource losses and the preserving of native species from potential extinction, due to water projects developed by the Federal government or under the licensing or regulation of the Federal government.

**Special Conservation:** (Sustain biological communities/ensure quality of recreation)

Activities conducted in cooperation with States, Tribes, and Universities focusing on localized partnerships for enhancement of fish populations.

## Public Use

Many of the NFHS's recovery and restoration activities also benefit the American public by providing and enhancing recreational fishing opportunities on public lands.

The California/Nevada FHC (CA) participated in 9 outreach activities in FY 2004 for both general and professional audiences. These activities included an interagency/Tribal workshop for diagnostic techniques used in the 2004 Klamath River Adult Chinook Disease Monitoring program, 6 presentations on applied research programs conducted by the Center to cooperators, a salmon life history presentation to elementary school classes, and a fish health exhibit booth at Coleman NFH's (CA) "Return of the Salmon Festival".

The Carson and Spring Creek NFH's (WA) and the Lower Columbia FHC (OR) initiated the Columbia Gorge Information/Education (I/E) program. The program engages the public by means of tours, special events, hatchery project support, a website, temporary and permanent displays, brochures/leaflets, and interagency coordination of I/E initiatives in the local communities. In FY 2004, the I/E program also provided salmon education to nearly all 4th grade classrooms in the mid-Columbia region. I/E staff conducted teacher workshops and coordinated with State, Federal, and Tribal partners to develop education and outreach programs for area students on and off site.

## Cooperation with Native Americans

To help out the federal government's Tribal Trust Responsibilities, the Service assists Native American Tribes with the management of fish and wildlife resources on reservation lands. In FY

2004, the Creston NFH (MT) stocked 47,878 Westslope cutthroat into five lakes on the Flathead Indian Reservation in NW Montana for the Confederated Salish Kootenai Tribe (CSKT). Hatchery and CSKT Tribal fish biologists monitor and evaluate the sport fishery and update recommendations in the Flathead Reservation Fishery Management Plan for site-specific strains and numbers of fish stocked each year to ensure that the fishery is managed efficiently.

The Nez Perce Tribe, through testimony of elders and review of historical literature, has identified streams that historically supported populations of coho salmon, including several streams in the Clearwater River Basin (ID). Based on the draft 1999 Clearwater River Coho Salmon Master Plan and a cooperative agreement with the Nez Perce Tribe, Dworshak NFH (ID) assists in rearing coho salmon for Tribal resource management objectives. Coho trapped in the Clearwater River basin were spawned at the hatchery. In FY 2004 the hatchery raised approximately 356,000 BY02 presmolts and 307,000 BY03 fingerlings for the Tribe. Hatchery staff also provided technical expertise to the Tribe on feeding, cleaning, handling, transport and sampling of coho salmon.

### **Leadership in Science and Technology**

NFHS personnel contributed to many facets of scientific study related to restoration and recovery of imperiled, threatened, and endangered species. These include quarantine, egg disinfection, fry/larvae disease prevention and treatment, cryopreservation, non-lethal sampling techniques, and diet evaluation studies. These successful joint studies and research with State, Federal, Tribal, and academic partners has resulted in increased efficiency in fish cultural operations, improved aquaculture technology, and increased survivability in captive-propagation of listed and declining fish species. For example, for over ten years, the Lamar FTC (PA) has been conducting experiments to address cryopreservation of milt and effects of anesthesia on Atlantic sturgeon and shared its experience in The Atlantic Sturgeon Culture Manual. The manual details culture technology starting with capture of wild sturgeon, spawning, egg incubation, fry and fingerling rearing, feeding and nutrition, stocking and pathogen susceptibility. State and federal agencies now have a compendium of techniques to produce sturgeon for population enhancement and restoration stocking of depleted populations as specified in recovery plans.

The Bozeman FHC (MT), in cooperation with the State of Montana, developed a specialized pallid sturgeon fish health assessment protocol. In FY 2004, fishery personnel throughout the country were trained to histologically evaluate pallid sturgeon tissues including liver condition, viral screens, and skin condition, thereby improving the health of this species at facilities throughout its range.

Some salmonids, such as steelhead and Atlantic salmon, are repeat spawners, returning in consecutive years to spawn. One way to increase survival of these repeat spawners (kelts) is to use specially formulated diets. Many broodstock diets are commercially available, but none specifically address the special needs of kelts. The Abernathy FTC's Applied Research Program in Nutrition has developed a handmade diet, based on a formula used for Atlantic salmon. Studies were done at the Yakama Indian Nation's Prosser Fish Hatchery, using small experimental quantities of this test diet as a model for a production scale diet. The Abernathy FTC (WA) also worked with North Attleboro NFH (MA) and with the Wellsboro USGS/BRD facility to evaluate the new diet in comparison to the standard diet used in the reconditioning of Atlantic salmon, which resulted in healthy fish being propagated with increased survivability.

The Bozeman FHC (MT) worked cooperatively with the National Partnership for Native and Cold-water Fishes to sample both experimentally infected fish and free-ranging trout in the Madison River (MT) and Yellowstone National Park using prescribed non-lethal methods. Results demonstrated that non-lethal methods provide a reliable detection of whirling disease, improving the efficiency of whirling disease detection and prevention. In addition, the Lower Columbia River FHC (ID)

surveyed over 2,000 wild fish at 130 sites in the Columbia River Basin (WA, OR) to evaluate disease status and to detect the potential spread of aquatic nuisance pathogens to improve aquatic ecosystem management decision making.

### **Aquatic Habitat Conservation and Management**

Submerged aquatic vegetation (SAV) provides important habitat for many aquatic species, including fish, shellfish, and waterfowl. It reduces nutrients, erosion, and sediments in the water, and acts as an indicator of water quality. Sedimentation and increased nutrient input have caused an 88% decline in SAV within the Chesapeake Bay, and a 100% decline within the tidal freshwater portion of the James River. The Alliance for the Chesapeake Bay (ACB) has a program in which volunteers monitor existing SAV beds and establish new ones with plant propagules. However, plant propagules are not readily available for the restoration program. Harrison Lake NFH (VA), and the Virginia Fisheries Coordinator, in partnership with ACB, have established a nursery pond for the cultivation of underwater grasses. Wild celery is being cultivated at the station to serve as a dependable, inexpensive source of plant propagules for the Chesapeake Bay. In 2004, 1,500 plants were placed in the pond (in addition to the 2200 planted in 2003). Monitoring in August found that plants are reproducing via rhizomes and 15-20% were observed flowering.

Methane (natural gas) occurs in association with coal, the Nation's most abundant fossil fuel resource. To produce methane from coal beds, water must be drawn off, so that methane can flow out of the coal. Disposal of the drawn water may affect streams and other habitats and its effect on aquatic life is unknown. The Bozeman FHC (MT) worked cooperatively with the State of Montana and USGS to assess possible effects of coal bed methane on several fish species. Histopathology analysis was provided to State fishery programs to assess fish health. Laboratory testing assays were also provided to the USGS Columbia Research Laboratory for controlled experimental studies at its Jackson Hole, Wyoming research facilities. The studies have completed comprehensive fish health testing on several fish species exposed to coal bed methane under experimentally controlled conditions.

### **Workforce Management**

The NFHS worked with other components of the Fisheries Program, the Department and other Service Planning and Evaluation staff and developed a standard set of work activities and output costs to implement Activity-Based Costing/Management. The Fisheries Operations Needs System links its workforce needs closely to each project so that the NFHS management knows what skills are needed.

Regular and substantive training is critical to improving efficiency at NFHS facilities. As an example of training opportunities in FY 2004, all staff at Ennis NFH (MT) received training in areas including warrant, IT, coldwater fish culture, fish health, diversity awareness, EEO, fish genetics, and pesticide use and certification. In addition, the chief of maintenance attended a class for heavy equipment operation and load securement training. Training was received from the Service training center (NCTC), outside consultants, and personal development material. This training ensures that station personnel are fully aware of new developments in fish cultural activities, equipment operation, safety issues, and construction/maintenance techniques.

### **2005 Planned Program Performance**

In FY 2005, the NFHS plans to implement 22 additional FONS projects in accordance with the priorities of the DOI's Strategic Plan, the Fisheries Program's *Vision* and Draft National Strategic Plan. Among these projects, the NFHS will enhance survival of wild salmon by the selective marking and potential harvest of 3.8 million hatchery-produced salmon; expand the development/identification of DNA markers so that the pedigree of released/recaptured sturgeon can be identified without stressing the fish; expanding the existing mussel propagation capabilities of Dale Hollow NFH (TN)

to accelerate restoration of imperiled freshwater mussels; enhance Quinalt NFH's (WA) ability to isolate Chinook salmon eggs to ensure that eggs are disease-free and to help restore and maintain fall Chinook runs on the Quinalt River; and begin a Westslope cutthroat stocking program of approximately 250,000 cutthroat annually in St. Mary's Lake (MT) to assist the species restoration and eventually provide a recreational fishery.

The Fisheries Information System (FIS) was vastly improved in FY 2004 with the addition of the Plans and Populations Modules, which provide the links between Fisheries Program authorities (legislation, management plans, etc) and planning and accomplishment reporting. In FY 2005, the Fisheries Program plans to develop a web-based prototype of its FIS which will allow the Program's Washington Office, Regions, and field stations to track progress in real-time.

In conjunction with Department, OMB, and Endangered Species personnel, a new Fisheries Program outcome measure was developed (% of threatened and endangered aquatic species populations, prescribed as necessary in Recovery Plans, that become self-sustaining in the wild). The new measure was developed to capture the results of all Fisheries Program captive propagation, science and technology, and habitat restoration and recovery efforts. Specific examples include:

In FY 2005, the LaCrosse FHC (WI) will be working to enhance the capability of determining the presence and prevalence of disease organisms in wild and hatchery raised juvenile and adult lake sturgeon. Iron River (WI) and Sullivan's Creek NFH's (MI) are increasing their efforts to recover and restore lake sturgeon to Tribal waters. Outbreaks of disease could devastate hatchery populations and could be introduced to wild fish from improperly monitored hatchery operations. The LaCrosse FHC is also conducting analyses and evaluating of samples and protocols used at Service production hatcheries, as well as analyzing tissue samples from wild lake sturgeon. The benefit of this project will lead to the reduction of threat of a disease epizootic to more than 500,000 lake sturgeon eggs and juvenile fish annually at the Genoa NFH (WI) and maintaining the health and genetic integrity of adult lake sturgeon in tribal waters. This project is guided by the Menominee Indian Reservation Lake Sturgeon Management Plan with Tribal and State partners, and the Bureau of Indian Affairs as cooperators.

Abernathy (WA), Bozeman (MT), Lamar (PA), and Mora (NM) FTC's and Bears Bluff NFH (SC) are developing and testing low polluting diets to assist the NFHS in meeting new and more stringent Environmental Protection Agency (EPA), Tribal and State nutrient and total suspended solids effluent standards. The EPA has developed new effluent standards and guidelines for aquaculture facilities, including recommending treatment technologies and best management practices for reducing total suspended solids and excess feed. The feed would be highly palatable, highly digestible, and low in excreted phosphorous and result in fecal solids that would be easier to remove. The Alchesay-Williams Creek NFH Complex (AZ) has utilized reduced phosphorous feeds for the past four years in order to meet more stringent effluent limitations prescribed by the White Mountain Apache Tribe.

American shad were plentiful in the Merrimack River prior to 1850, when dams constructed to power the industrial revolution blocked access to spawning areas. Efforts to enhance shad population through small scale stocking of fish and eggs from other rivers have met with limited success. In FY 2005, Nashua NFH (NH) will increase the current Merrimack population from 20,000 to 100,000 by stocking five million juvenile shad annually in underutilized sections of the river above dams. The Nashua NFH will produce the juveniles annually for the next 10 years from Merrimack River shad held and spawned at the station to restore the population to the self-sustaining level.

The Blackfeet Tribal Fishery Management Plan prioritizes the stocking of endemic Westslope cutthroat trout into Tribal managed waters. The management plan recommends stocking native fish in open system lakes, glaciated potholes that are not impounded and have seasonal inlets and outlets, while non-endemic species are stocked in closed systems. In order to restore Westslope cutthroats and eventually provide a recreational fishery for the species, the Tribe has requested the Service begin a Westslope cutthroat stocking program of approximately 250,000 cutthroats annually in St. Mary's Lake from Creston NFH (MT). A switch from nonnative to native fish stocking in Tribal waters would prevent species competition and address genetic concerns in the St. Mary's Lake and Upper Missouri river drainages. As a key component of the initiative, Creston NFH will implement strain specific fish health requirements, specific genetic management practices, and overall management evaluation measures.

### Justification of 2006 Program Changes

Subactivity		2006 Budget Request	Program Changes (+/-)
Hatchery Operations	\$(000)	40,990	+2,111
	FTE	455	0

The FY 2006 Budget Request for Hatchery Operations is \$40,990,000 and 455 FTE, a net program increase of \$2,111,000 and 0 FTE from the 2005 enacted level. The increase will be used to implement the President's and Secretary's priorities, captured in the DOI's Resource Protection Goals to sustain biological communities on DOI managed and influenced lands and waters in a manner consistent with obligations regarding the allocation and use of water and to improve health of watersheds, landscapes, and marine resources that are managed or influenced in a manner consistent with obligations regarding the allocation and use of water.

### General Program Activities Increase (+\$2,231,000)

The requested increase will be used by the NFHS to implement 34 high-priority FONS projects, accounting for 63 priority Recovery Plan and Fishery Management Plan tasks. These projects include improvements to ongoing Recovery Plan and Fishery Management Plan tasks, such as the joint study of Coho salmon density at the Quinault NFH (WA), the Western Washington FRO (WA), the Abernathy FTC (WA), and the Olympia FHC (WA); and accomplishment of additional Recovery Plan and Fishery Management Plan tasks, such as the culture and stocking of pallid sturgeon at Gavins Point NFH (SD). Specifically, the increased funding will raise annual performance from 79 percent in FY 2005 to 85 percent (5 new tasks) of recovery plan production tasks achieved in FY 2006; allow accomplishment of 1 new restoration production task achieved in FY 2006; from 54 percent in FY 2005 to 66 percent (13 new tasks) of applied science and technology tasks implemented prescribed by Recovery Plans; from 50 percent to 54 percent (8 new tasks) of applied science and technology tasks implemented as prescribed by fishery management plans; from 54 percent to 58 percent (5 new task) for marking and tagging targets met; and 3 new populations held in refugia. Project selection was based on a number of factors, including the ecological, social, and economic benefits and needs, to help restore species such as Coho and Chinook salmons, lake and Westslope cutthroat trout, paddlefish, lake, pallid and Atlantic sturgeons, and razorback sucker. Project selection was based on coordination with partners, thereby increasing the likelihood of successful restoration and increased recreational fishing opportunities. However, underlying all of these factors is that the selected projects will help the Fisheries Program to achieve its FY 2006 target of 15% of threatened or endangered populations, prescribed as necessary in Recovery Plans, that become self-sustaining in the wild, an outcome performance measure developed during the FY 2006 NFHS PART. These high priority projects identified in FONS focus on increasing program efficiency through evaluations of hatchery products and implementation of innovative tools and techniques.



**Increases to Address FY 2005 Rescissions (+\$44,000)**

The President's budget requests a number of targeted increases to restore certain priorities to pre-rescission FY 2005 conference levels. In total, the President's budget includes an increase of \$44,000 within the National Fish Hatchery System to address FY 2005 rescissions. Specifically, \$36,000 would be restored to Pacific Northwest Salmon, and \$8,000 would be restored for activities related to the Great Lakes Consent Decree. The restored funding will prevent a reduction in performance due to erosion of base funding. This would allow the National Fish Hatchery System to continue its efforts to recover listed fish populations in concert with partners in FY 2006.

**Vehicle Reduction (-\$6,000)**

The 2006 budget proposes a reduction of \$6,000 in the Hatchery Operations program to recognize expected savings to be achieved through improved fleet management within the Service and across the Department of Interior.

**Technical Adjustment (-\$158,000)**

This reflects a technical adjustment to reconcile to the Department of the Interior's support table.

FY2006 NFHS Operations Increase Request	
Quinault NFH (WA) Western Washington FRO (WA) FONS #1999-008	\$120,000
<b>Coho Density Study – Fish Production</b>	
This project will evaluate production protocols for coho salmon at Quinault NFH to determine appropriate production levels. Rearing density of coho salmon was recently cut at Quinault NFH because of high levels of disease. Disease levels have decreased, but the question of whether rearing densities should be raised remains. Studies to determine how decreasing rearing density affected fish after release were inconclusive due to low statistical power. Funds would be used to conduct a statistically valid 6-year study to determine if survival differences are due to rearing densities or other factors.	
Quinault NFH (WA) FONS #1999-001	\$16,400
<b>Egg Isolation Unit to Produce Chinook for Agreement with the Quinault Indian Nation</b>	
This project will establish an egg isolation unit to protect the hatchery against the introduction of disease from imported eggs until it can be determined that they are disease-free. Currently, eggs transferred onto the station receive cursory treatments which cannot ensure that any disease present in those eggs will not spread throughout Quinault National Fish Hatchery. This would result in additional expense to treat diseased fish, and likely result in a decrease in production. This project proposes implementation of management strategies to ensure minimal risk of disease to the hatchery.	

Abernathy FTC (WA)  
FONS #2001-001

\$70,000

#### **Development of Native Broodstock Techniques for Steelhead**

This project is to comply with NMFS' Biological Opinion on Pacific salmonids by evaluating captive rearing of wild-caught juvenile steelhead as a new method of developing hatchery broodstocks. Goals are: (1) to evaluate captive-rearing of wild-caught juveniles as a low-risk alternative to trapping ESA listed adults for initiating new hatchery broodstocks and (2) to establish a hatchery run of steelhead in Abernathy Creek that is genetically integrated with the naturally spawning population. Greater than 75% annual survival of captively reared fish has been achieved from steelhead collected and released in 1999, 2000, and 2001. Captively reared fish (110 pairs) were spawned as three-year old adults in 2002 and 2003. 30,000 hatchery-produced progeny (BY 2002) were released into Abernathy Creek in 2003. Adult steelhead from the 2003 release are expected to return to the Abernathy FTC during the late fall and winter, 2004-2005. A portion of these returning fish will be retained for broodstock.

Lower Columbia River FHC (OR)  
FONS #2002-001

\$6,000

#### **Development of Native Broodstock Techniques -- Restoration and Recovery**

This project is to comply with NMFS' Biological Opinion and USFWS restoration and recovery efforts by working to establish a native stock of naturally-spawned fish to return a natural population of steelhead to Abernathy Creek, WA. Study goals are: 1) develop methods to rear naturally produced fish under hatchery conditions; 2) use the progeny of this native broodstock to recover the depleted population; 3) avoid the removal of ESA listed adult fish as native broodstock; and 4) ultimately produce a self-sustaining stock of steelhead. In Sept. 1999, 500 naturally-spawned juvenile steelhead were collected from Abernathy Creek. Using minimal human contact, automatic feeders, raceway covers and predator netting, an 88% survival rate was achieved. These fish will be spawned, the progeny stocked in Abernathy Creek, and the entire population will be monitored for health, physiology, and abundance. In comparison, undisturbed steelhead populations in adjoining drainages will also be monitored. This project is shared with Abernathy FTC and Columbia River Fisheries Program Office.

Abernathy FTC (WA)  
Olympia FHC (WA)  
FONS #2004-006  
FONS #2001-002

\$33,000

#### **Identify Optimal Density for Quinault NFH Coho Salmon**

Quinault NFH rears coho salmon for restoration and as part of the USFWS' Tribal trust responsibilities to the Quinault Indian Nation, as described in a Memorandum of Agreement and under guidance found in US v. Washington. Success of this production program has varied by production year and rearing density. In cooperation with the Quinault NFH, the Olympia Fish Health Center, and the Western Washington Fish and Wildlife Office, Abernathy FTC staff will provide technical assistance in the form of study design review (statistical analysis and report write-up, if requested) of FONS project #2001-002. The study duration will be approximately two full life cycles, 6 years, to allow for two adult returns to be observed. The objective will be to determine the optimal rearing densities for Quinault NFH coho salmon to minimize the incidence of disease and maximize the number of fish reared for restoration and to meet Tribal trust responsibilities.

Lower Columbia FHC (OR)  
FONS # 13231-2005-006

\$13,000

#### **Habitat Enhancement and Fish Carcasses: Disease Concerns**

Nutrients supplied by salmon returning to their natal streams were a key component in the web of insects, mammals and plants, which in turn play a role in fish survival. The lack of returning salmon has created streams barren of nutrients needed to provide habitat for wild fish survival. To combat these losses, tribal, state and federal entities are using hatchery salmon carcasses to re-supply vital nutrients to streams. However, use of diseased carcasses could inadvertently transmit pathogenic germs to native fish, many of which are endangered. Simple methods, easily adaptable for field use, will be tested to ascertain their effectiveness in killing fish germs. The "germ load" of fish carcasses, before and after freezing/heating treatments, will be measured using standard fish health protocols. This information will prevent the spread of disease and follows the policies of the US Fish & Wildlife Service and the Pacific NW Fish Health Protection Committee. Results will be immediately useable in the field to help in interagency efforts to revitalize aquatic habitats in a manner consistent with the Endangered Species Act and NMFS Biological Opinions.

Abernathy FTC (WA), FONS #13210-2004-025	\$70,000
Warm Springs NFH (OR), FONS #13290-2000-004	
Columbia River FPO (WA), FONS #2000-011	
Lower Columbia FHC (OR), FONS #13231-2000-004	

**Simulated Natural Rearing (NATURES) Using Altered Feeding Strategies**

This project will investigate the performance of fish reared in simulated natural rearing (NATURES) environments compared to standard hatchery ponds. Features will be developed at the hatchery to simulate natural habitat found in streams, including shade, cover, in-stream structure, substrate, color, flow, and rearing density. Juvenile fish in treatments, control groups and streams will be monitored to assess and compare performance. Performance will be measured, including growth, survival, swimming ability, cryptic coloration, predator avoidance, foraging behavior, habitat utilization, and fish health. Warm Springs National Fish Hatchery will be responsible for all fish cultural activities associated with the project. Maintenance of characteristics of the native stock in both the hatchery and stream environment will be a priority. The potential of NATURES rearing to maintain wild characteristics has justified it being recommended as an Endangered Species Act conservation action for hatcheries in the Columbia River basin.

California/Nevada FHC (CA)	\$56,000
FONS # 2002-002	

**Medical Technology for Endangered Fish Health**

This project is to study the water quality in relation to the Upper Klamath Lake Lost River (LRS) and short nose suckers that are immunosuppressed and susceptible to pathogens. Water levels have significant economic and environmental effects in the Klamath basin. It is known that major fish kills have been linked to adverse water quality during blue-green algal blooms, which represent a significant threat to the populations. Stressed fish become sick with pathogens that they normally can resist. We propose a factorial design experiment in the Center's wet laboratory to examine the immune system of juvenile LRS exposed to simulated algal bloom water conditions. This work would be coordinated with the Klamath Tribe, the USGS, and the Klamath Falls FWO.

California/Nevada FHC (CA)  
FONS #11230-2005-003

\$10,500

**Workshop to Disseminate Advanced Molecular Diagnostic Technology to Fish Health Centers**

Polymerase chain reaction (PCR) is an extremely specific and sensitive methodology used to detect pathogenic organisms. A number of PCR protocols have been developed to identify and quantify important fish pathogens. This project will provide for a comprehensive workshop on these diagnostic assays, to educate the Service's Fish Health Center personnel on the latest techniques. The workshop will consist of presentations by known authorities on the various protocols, presentations by technical representatives on the equipment needed for the assays, and a hands-on laboratory for the participants. These workshops will be presented in collaboration between the Abernathy FTC (WA) and the University of Idaho Cooperative Extension Unit.

California/Nevada FHC (CA)  
FONS #11230-2005-003

\$9,000

**Evaluate Natural Rearing Practices of Sacramento River Steelhead**

Steelhead produced at Coleman NFH are being utilized to recover the ESA-listed (threatened) natural populations, as well as providing recreational fishing opportunities. It is assumed that natural-like rearing conditions (e.g., underwater feeding, in-water structure, overhead cover, etc.) will elicit behavioral and physiological characteristics similar to those observed in wild steelhead. Preliminary studies indicate these modifications to the hatchery's rearing ponds may benefit the fish. Sound scientific analysis requires evaluating physiological responses of hatchery produced juveniles and adult return rates for steelhead reared under traditional and natural rearing strategies. The project will provide resources for marking, tagging, recovering tagged fish, evaluation of wild-like characteristics in the hatchery fish, cost benefit analysis of the changes to hatchery operations, and outreach to cooperators. Marking of fish and some laboratory analysis would be outsourced to local vendors. This is a shared project with the California-Nevada FHC, Abernathy FTC, Red Bluff FWO, and Coleman NFH.

Tishomingo NFH (OK)  
FONS #1999-001

\$212,000

**Restoration of Paddlefish in Arkansas-Red River Basin**

This project will enhance the Tishomingo NFH's ability to propagate native paddlefish for restoring populations to historical ranges above impoundments. The hatchery has been unable to meet stocking commitments in the waters above Denison Dam for the past three years due to funding/personnel constraints. Meeting the stocking commitment is critical to re-establishing a self-sustaining population.

Willow Beach NFH (AZ)  
FONS #22240-2000-002

\$72,000

### **Razorback Sucker Broodstock Collection**

This project will monitor the Razorback sucker population in the upper 10 miles of Lake Mohave, below Hoover Dam on the Lower Colorado River, Arizona and produce fish for restoration efforts in the upper and lower Colorado river basins. Up to 100 wild adults will be collected annually and will be tagged, measured, weighed for future use in estimating population size and developing management strategies. Biologists will simultaneously collect 20 pairs of wild brood fish to spawn and produce 200,000 fry for Recovery programs, brood stock development, and gamete storage technique development. These tasks will assist in meeting biological opinion requirements for Lakes Mohave and Havasu. The Pinetop Fish Health Center will provide fish health services for the project.

Pine Top FHC (AZ)  
FONS #22240-2000-002

\$24,000

### **Fish Health Training**

As new and improved fish health laboratory techniques are developed it is important to the Center's mission that staff become trained and proficient in the use and application of those techniques. Training is also required for Center staff to maintain AFS Fish Health Inspector Certification. This project will provide each employee at least one training opportunity in the upcoming year.

Jordan River NFH (MI)  
FONS #2002-001

\$260,500

### **US vs. Michigan: Offshore Stocking Operations**

The funding for this project will be used to cover operation, maintenance and dock space for the new vessel replacing the old R/V Togue. The vessel will be used to stock 3.2-3.5 million native lake trout and conduct assessment activities to monitor and evaluate the success of the hatchery-reared fish for the Great Lakes restoration program and U.S. vs. Michigan Decree. Data from Lake Huron assessment studies indicates survival of hatchery-reared lake trout released offshore is greater than shore releases. The vessel is estimated to be on the water a total of 8 months a year, rather than the 4 months that the Togue was, and requires a full time crew of three for safe operation on the Great Lakes. Assessment activities will be carried out by the Alpena and Green Bay Fishery Resource offices. The vessel will stock native lake trout from the Iron River and Pendills Creek National Fish Hatcheries into the Great Lakes.

LaCrosse FHC (WI)  
FONS #2004-001

\$20,000

### **Establish a Fish Technology Center in Region 3**

Region 3 contains the headwaters of the Mississippi River and the Great Lakes, and three major drainages (Atlantic, Gulf of Mexico, and Hudson Bay) are located within the Region. Region 3 is the only FWS Region that does not have a FTC. Critical fisheries management issues, such as native mussel decline and invasive species, are forcing managers and biologists to make quick, reactionary decisions. An applied research component to Region 3's resource management strategy is required to alleviate "decisions on the fly". Consolidation of specific functions at three offices (LaCrosse Fish Health Center, LaCrosse FRO, and Genoa NFH), would provide the foundation to establish an FTC, with an initial focus on endangered mussel propagation and evaluating control methods for invasive species.

Neosho NFH (MO)  
FONS #2002-007

\$70,000

### **Pallid Sturgeon Propagation, Tagging, Stocking, and Evaluation**

The Pallid Sturgeon Recovery Team has determined that an accelerated stocking program is warranted to preclude extirpation of the endangered pallid sturgeon. Missouri state fish hatchery fish were produced and stocked in the midrange recovery zone (Lower Missouri and Middle Mississippi Rivers) in 1994 (7,200) and 1997 (3,000). Columbia FRO staff have been involved in tagging, monitoring, and stocking plan development. The current plan calls for stocking 3,000 pallid sturgeon each year in these recovery reaches for at least the next 15 years. Columbia FRO will participate in this effort by assisting with spawning, production, tagging, and stocking operations, collection of wild brood stock, completing post-stocking monitoring and evaluation, conducting outreach with resultant pallid sturgeon data, and participating on the Pallid Sturgeon Recovery Team.

Iron River NFH (WI)  
FONS #2001-001

\$22,000

### **Native Coaster Brook Trout Restoration in Lake Superior**

This project will develop and maintain a captive spawning population of native coaster brook trout and support production, as called for in the Coaster Brook Trout Restoration Plan. Propagated brook trout will be reintroduced into waters on the south shore of Lake Superior, where they have been extirpated. The Coaster Brook Trout Restoration Plan requires that only genetically pure strains of healthy fish be reintroduced to the wild. Funds will be used to: 1) obtain new equipment (which is not entered in the Service's Maintenance Management System) to handle Coaster Brook Trout, 2) work with the LaCrosse Fish Health Center to manage genetic and fish health issues, and 3) reintroduce fish to strain-specific streams.

Private John Allen NFH (MS)  
FONS #1999-001

\$28,500

### **Paddlefish and Lake Sturgeon Propagation**

This project will provide the capability for the Private John Allen NFH to increase paddlefish and lake sturgeon production from the current 20,000 fish per year to 50,000 fish per year for each species. This increased production will greatly accelerate recovery of the two species. This increased production will be accomplished by improvements to the spawning and rearing facilities at the hatchery by adding a "state of the art" re-circulating intensive culture system, complete with anti -escapement devices and a cooling system for the intensive culture area. The current extensive (pond) rearing and flow-through tank rearing/holding facilities at the hatchery are not conducive to rearing large numbers of paddlefish or sturgeon. The re-circulating intensive culture system will allow spawning and rearing higher densities of fish in a more controlled environment. The addition of the cooling unit will benefit the re-circulating systems by keeping ambient temperature of the intensive culture room at optimal levels for each specific species and will result in cost savings over the current method of cooling.

Bears Bluff NFH (SC)  
FONS #2001-001

\$104,500

### **Develop Propagation Techniques and Refugia for Atlantic Sturgeon**

This project will provide Bears Bluff NFH with the capability to develop culture and refugia techniques for Atlantic sturgeon to enhance restoration activities along the South Atlantic coast. At one time, Atlantic sturgeon provided a significant commercial and recreational fishery for both the fish and eggs which were used to produce high quality caviar, but the species has been extirpated from many Southern rivers due to over-harvest, construction of dams, and water quality problems. Development of culture techniques for this species will allow fish production for research aimed at determining specific environmental problems encountered by wild sturgeon in natal rivers, provide a source of fish for re-stocking in extirpated rivers, and provide refugia for strains of Atlantic sturgeon that are in danger of extinction. Specifically, this project will provide for installation of six 20-foot fiberglass tanks with temperature control and re-circulating systems for Atlantic sturgeon culture. Completion of this project will allow the Bears Bluff National Fish Hatchery staff to work cooperatively with state biologists along the South Atlantic coast to restore populations of valuable Atlantic sturgeon.



Warm Springs FTC (GA)  
FONS #2004-001

\$91,200

### **Genetic Characterization of National Salmonid Broodstocks**

This project will enable Warm Springs FTC personnel to direct future broodstock management information on the levels of inbreeding, polymorphism, and heterozygosity for four broodstock strains, and data necessary to assess current management practices at Erwin NFH (TN). Erwin NFH maintains rainbow trout broodstocks supporting our Nation's fisheries, providing over 10 million eggs annually to Federal, State and Tribal hatcheries. Genetic characterization is necessary to ensure that broodstocks used to produce these eggs have not lost genetic diversity since strain development. Data generated at Warm Springs will provide a genetic baseline for Erwin's stocks, and be used to compare the same strains held at other facilities. Warm Springs personnel will analyze tissues from 100 fish from each strain (from each of three year classes) and 100 fish from each strain held at other facilities. These 1200 samples will provide the statistical sample necessary to determine the amount of divergence present between hatchery stocks, thereby ensuring proper genetic diversity.

Warm Springs NFH (GA)  
FONS #1999-004

\$77,500

### **Recovery & Restoration of Seven Endangered and Threatened ACF Basin Freshwater Mussels**

Holding and propagating endangered or threatened mussels in refugia while habitats are restored is a proven recovery tool. This project will provide Warm Springs NFH capabilities to develop a long-term scientifically-based program to hold imperiled freshwater mussels (Ochlockonee & Gulf moccasinshells, oval pigtoe, purple bankclimber, shinyrayed pocketbook, chipola slabshell, etc.) in refugia and to develop culture and rearing techniques for selected species as called for in their recovery plans. Wild populations will be scientifically surveyed and monitored, then correlated with food availability, sediment and water quality to determine life history, critical habitat, and limiting environmental factors affecting their numbers and distribution. Artificial propagation techniques (pond culture, intensive culture, etc.) will be developed along with quarantine and isolation facilities. Additional studies will include development of artificial culture media & nutritional data required to maintain preservation and restocking programs, image analysis for counting microscopic mussels.

Private John Allen NFH (MS)  
FONS #1999-003

\$17,500

### **Alligator Gar Propagation**

This project will provide the capability for Private John Allen NFH to develop the scientific techniques to hold, spawn, and rear the imperiled alligator gar. This predator, one of the largest freshwater fish in North America, was once thought to be detrimental to sport fish populations and was nearly driven to extinction by misguided conservation practices. Now, however, it is believed to actually benefit sport fish by controlling rough fish populations and by contributing to biological diversity in the system. Working with this species requires the use of larger, sturdier holding tanks. This project will develop and initiate scientific propagation efforts by upgrading facilities and adding specialized rearing and transport equipment needed to handle this large fish. As technology progresses, production is estimated to increase from an initial production of 20,000 fish the first year to over 50,000 fish per year in subsequent years.

Warm Springs FHC (GA)  
FONS #2004-002

\$22,800

### **Development of a Diagnostic Tracking System module-part of the Fish Health Information System**

This project will enhance the ability of the Fish Health Centers to provide fish health information in a nationally standardized format, by developing the Diagnostic Tracking System as an additional module in the Fish Health Information System (a relational database system that contains the National Wild Fish Health Survey Database). Information gathered by the National Fish Health Centers via diagnostics, monitoring, and inspections on aquatic animals is provided to priority publics including: Hatchery managers, Fish & Wildlife Service offices, federal and state agencies, and tribes. This information is utilized to enhance the fitness of cultured animals, assist management and evaluation of aquatic ecosystems, support protection of wild stocks, and promote restoration of threatened and endangered species.

Lamar NFH & NE Fishery Center (PA)  
FONS #2004-011

\$285,000

**Application of Genetic Information to Restoration and Recovery of Imperiled and Threatened Species**

The applications and importance of genetic technology and theory to the conservation and management of species are widely documented. Recently, the Northeast Region obtained the technology to perform genetic analysis and to provide technical assistance and consultation for conservation and management. These capabilities will be employed to support. Initial assessments to form the foundation for continued genetic monitoring and assessment of a variety of key species (e.g. landlocked salmon, brook trout, bog turtles). Funding will allow start-up sampling programs and lab analyses. An important result of genetic identification of brood sources is the successful return and reproduction of adult species. For fish species, the estimation of allele frequencies among the stock being restored will identify which introduced stocks are successful in returning as adults and which stocks successfully contributed to reproduction. This project will develop a methodology to evaluate stocking practices and spawning protocols for the National Fish Hatcheries.

White Sulphur Springs NFH (WV)  
FONS #2003-009

\$60,000

**Feeding Regimes For Maintaining A Suite Of Endangered Freshwater Mussels in Hatchery Settings**

The success of established conservation goals to restore dwindling freshwater mussel populations through culture and propagation requires an understanding of their feeding physiology. Different species of bivalves optimally feed under different conditions and may vary in their nutritional requirements. This research will identify specific nutritional and feeding requirements of freshwater mussels. Feeding rates, diet assimilation, and preferences for various hatchery-holding conditions will be examined among species of mussels from the primary subfamilies of the Unionaceae. A suitable feeding regime for maintaining different species of mussels will be provided. This information is critical to implementing captive breeding programs in hatcheries that adequately meet the dietary requirements of different species of mussels. Successful reintroduction and restoration of the population of endangered species will likely depend on the fitness of the mussels upon release.

Harrison Lake NFH (VA)  
FONS #2004-104

\$26,000

### **American Shad Restoration in the Rappahannock River, Virginia**

American shad was once the dominant commercial fishery in the Chesapeake Bay, but the fishery declined drastically due in part to the loss of hundreds of miles of spawning/nursery habitat due to dam construction. Fish passage at dams and reintroducing larvae to imprint them on the restored habitat are key solutions to restoring the species. Embrey Dam was breached in February 2004, restoring 83 miles of historic spawning/nursery habitat for shad. However, due to years of exclusion, wild American shad that return annually to spawn in the Rappahannock are not imprinted to migrate to the historic spawning habitat above the dam. To accelerate repopulation of the upstream habitat and reestablish a self-sustaining population, Harrison Lake NFH and the Virginia Fisheries Coordinator will work cooperatively with partners to capture brood fish from the Potomac River, collect eggs, and transfer them to Harrison Lake NFH for rearing. Two million marked shad fry will be stocked annually into the Rappahannock River. Population surveys, and genetic and health characterization surveys will be conducted on shad stocks in the Potomac and Rappahannock Rivers. Evaluation of hatchery stockings also will be conducted.

Creston NFH (MT)  
FONS #2003-001

\$5,000

### **Restoring Native Westslope Cutthroat Trout on the Flathead Indian Reservation**

This project will allow the Service to fulfill its Tribal trust responsibility by stocking a minimum of 35,000 Westslope cutthroat annually on the Flathead Indian Reservation through the Creston NFH. The Confederated Salish and Kootenai Tribal (CSKT) Fishery Management Plan prioritizes the stocking of endemic Westslope cutthroat trout into Tribal managed waters. Fishery biologists with the CSKT monitor and evaluate the native fishery and develop requests for specific numbers of fish based on annual field observations. A healthy Tribal fishery helps the CSKT meet native fish restoration goals, provides increased recreational fishing opportunities and strengthens Tribal cultural heritage. Funding this project would allow the Creston NFH to cover production costs associated with the slower growth rates, enhanced feed and the lower rearing density requirements of Westslope cutthroat trout. It would also allow the hatchery to implement strain specific fish health requirements, proper genetic protection, and management evaluation adjustments.

Leadville NFH (CO)  
FONS #2003-001

\$47,000

### **Operating Water Treatment Facility to Control Whirling Disease to Assist in Recovery of Greenback Cutthroat Trout**

This project will provide operating costs for mechanical filters and UV sterilization equipment, necessary to ensure disease-free operation of the historic Leadville NFH. To comply with Colorado State regulations, no whirling disease positive fish could be produced at this station after December 2003. Not implementing this project will diminish recovery efforts for Greenback Cutthroat trout and the Colorado River endangered fishes.

Gavins Point NFH (SD)  
FONS #1999-001

\$125,500

### **Culturing and Stocking Pallid Sturgeon (Phases 1 and 2)**

This project will improve declining populations of endangered pallid sturgeon in the Mainstem Missouri River Basin. A pallid sturgeon broodstock of known genetic origin and diversity will be created at Gavins Point NFH, which will meet requirements of the species' Recovery Plan. Juvenile sturgeon produced from that broodstock will reflect the natural diversity of wild sturgeon, enhancing their fitness and prospects for recovery. Determining genetic differences in mature sturgeon and development and implementation of devise mating strategies will maximize biological diversity and survival of resulting progeny, accelerating recovery of the species. An INAD will allow hormones to be used to enhance spawning. Gavins Point NFH will collect eggs from wild populations using established genetic principles and protocols to maintain genetic diversity. The hatchery will rear, tag, and stock approximately 8,000 to 10,000 of the advanced fingerlings into Recovery Priority Management Areas within the Missouri River Basin to compensate for loss of natural spawning habitat.

Ouray NFH (UT)  
FONS #2003-001

\$124,600

### **Recovering a Candidate Species: Razorback Sucker**

This project would improve declining populations of razorback sucker by enabling the hatchery to produce 3,000, 300mm (12") razorback sucker to meet specific size requirements required by the Upper Colorado River Endangered Fish Recovery Program and the State of Utah. The short-term goal is to prevent extinction of the species, while the long-term goal is achieving self-sustaining populations so the razorback sucker might be down-listed and then de-listed. Currently, razorback sucker are being produced in numbers sufficient to meet stocking plan goals, however the fish require additional space to meet specific size requirements. The fish would be reared from 100mm (4") to 300mm (12") at a rate of 500 fish per acre and stocked to the Upper and Middle Green River in Utah. The current hatchery site has the required (6 acre) space available because initial planning recognized the potential need for future pond expansion.

Saratoga NFH (WY)  
FONS #2003-001

\$23,000

**Improve National Broodstock through Genetic Assessment, Monitoring and Management**

This project will genetically analyze stocks at federal facilities that have not been characterized within the past five years. We propose to develop a baseline genetic characterization of stocks using microsatellite technology. This information will provide levels of inbreeding, polymorphism and heterozygosity for broodstock, and the data necessary to direct future Broodstock management. Saratoga NFH will assess two Broodstock and data will be used to develop scientifically sound Broodstock programs. National Broodstock hatcheries maintain lake trout and inland salmonid Broodstock for supporting our Nation's fisheries with egg shipments to Federal, State and Tribal hatcheries throughout the US, which in turn, provide angling opportunities to the Nation.

Bozeman FHC (MT)  
FONS #1999-006

\$52,000

**Developing Advanced Genetically Based DNA Screening for the Detection of Fish Pathogens**

Current methods of fish disease diagnosis and detection focus on confirming the causes of disease outbreaks for a limited range of pathogens. There is a growing need to acquire diagnostic tools that can provide a means of rapid identification of infectious pathogens during sub-clinical infections. More importantly however, is an urgent need to develop techniques with a high degree of sensitivity and accuracy that can be used in surveillance and programs to detect significant pathogens before major disease outbreaks occur. DNA testing is an accepted standard in human medicine, providing the highest level of sensitivity with diagnosis and potential treatments of diseases. The Center has developed the capability to diagnose the presence of fish pathogens with DNA testing. This project would further develop DNA analysis capabilities and equip the Center with molecular biology expertise. This will provide a greater capability to screen large volumes of fish and may greatly enhance the use of non-lethal sampling techniques, benefiting a variety of endangered fish species.

Creston NFH (MT)  
FONS #2002-001

\$12,000

**Establishing Westslope Cutthroat Trout Genetic Reserve for the Flathead River Basin**

This project would preserve the biological diversity and integrity of the Flathead River Basin Westslope cutthroat trout. By establishing a genetic management program for this west side strain of cutthroat, Creston NFH could assist in restoring a native fish and help to preclude listing the species as Threatened. Currently all Westslope restoration programs in the state utilize a domestic strain (the MO12 strain) reared at a State hatchery east of the divide. State, Tribal and Federal management biologists are interested in utilizing a west side strain of westslope for area restoration projects in NW Montana. Hatchery activities would include developing a management plan for a genetically pure, disease free Westslope broodstock, from which gametes could be produced and fingerlings reared to be returned to appropriate restored habitats.

National AADAP Office (MT)  
FONS #2005-001

\$45,000

**Establish complete efficacy & target animal safety data packages for submission to FDA to support a New Animal Drug Application for the use of Florfenicol (an oral antibiotic)**

Fisheries management programs throughout the U.S., particularly the Service's and our State and Tribal resource agency partners, are desperately in need of an effective, broad spectrum oral antibacterial agent. Florfenicol has been nationally identified as a priority compound to meet this need. This project will generate important efficacy and target animal safety data required by FDA to support a new animal drug approval for this drug. Approval of this drug will benefit the health of all finfish species reared by the Service (and State and Tribal resource agencies). In particular species such as salmon in Regions 1, 5 & 7; rainbow trout in Regions 4, 5 & 6; T&E salmonid species in Regions 2, 3 & 5; and T&E warm & coolwater non-salmonid species in Regions 1, 2, 4 & 6 will benefit from this drug once approved. This is a project of national scope, and will benefit all States.

## Hatchery Maintenance and Rehabilitation

### Program Overview

Implementation of the National Fish Hatchery System's (NFHS) Maintenance Program at its diverse complement of field stations directly supports the Department of the Interior's Strategic Plan Resource Protection Goals to Sustain Biological Communities and To Manage Populations to Self-sustaining Levels for Specific Species by maintaining and ensuring that key constructed assets on NFHS facilities are in structurally sound, safe and efficient condition. Proper maintenance of facilities is essential to sustain the captive aquatic populations necessary to meet recovery, restoration and mitigation objectives identified in approved Recovery Plans and fishery management plans.

The NFHS operates a complex and critical cadre of constructed assets valued at more than \$1.2 billion dollars to support the Fisheries Program mission of **“Working with partners to restore and maintain fish and other aquatic resources at self-sustaining levels and support Federal Mitigation programs for the benefit of the American public”**. Maintaining the core mission-related assets to accomplish this mission is challenging and requires a focused business management approach. The NFHS's Maintenance and Equipment Goal is:

***“To maintain existing assets and equipment in a safe, fully-functional working order, and to construct new assets or purchase new equipment essential to mission accomplishment.”***

The NFHS has a nearly final draft of the **USFWS Fisheries Program Maintenance Management Agreement**, written to provide maintenance management guidance and SOP's that are consistent with Departmental and Service guidance and financial management directives. The NFHS has embraced the recommendations made to the Department in the OIG's December 2001 Advisory Report titled *“Maintaining the Department of Interior's Facilities, A Framework for Action.”* The report documents the need, amongst others, to take the following actions:

- ✓ Take immediate steps to reduce the backlog
- ✓ Manage facilities proactively
- ✓ Conduct Condition Assessments
- ✓ Establish Performance Measures, and
- ✓ Implement a Facilities Management System,

and has incorporated these principles into the **Maintenance Management Agreement**. Within Program funding constraints, the NFHS has focused on each of these recommendations both in actions taken and out-year planning. The DOI's Strategic Plan now includes a specific performance measure to track maintenance progress, and consistent with that Plan and guidance from OMB's PART review, the NFHS has implemented maintenance performance measures that will track the progress made toward assessing asset condition status and bringing assets back to proper working condition, particularly mission critical assets.

The NFHS **Condition Assessment Program** was established in FY 2001 to systematically evaluate the condition of the NFHS' real property assets, with a replacement value of more than \$50,000, at least once every five years. NFHS databases have been modified to meet DOI standards and data requirements for collecting data generated during comprehensive condition assessments. To date, 78% of the System's hatcheries have had comprehensive condition assessments completed.



The **Facilities Condition Index (FCI)** is another tool used to compare replacement versus repair cost on hatcheries. It is calculated as the ratio of deferred maintenance needs to replacement costs. FCI, above set thresholds, indicates when replacement is more appropriate than repair, tracks the performance of the hatchery systems maintenance program, and provides the performance metric for NFHS maintenance under the DOI strategic plan.

In Fiscal Year 2001, the Department adopted MAXIMO™ as the software system to manage facility maintenance management. MAXIMO™ has been or is being implemented in BLM, BOR, USGS, FWS, NPS, BIA (Irrigation Projects and Safety of Dams), and NBC (for facility maintenance management of the Main and South Interior Buildings). Bureaus operate MAXIMO™ independently. The Department and its bureaus are moving to a single platform solution in order that there can be a single interface with FBMS. The single platform solution will result in better control of data standards, easier analysis of Department-wide asset information, and a more efficient and effective interface with FBMS.

The NFHS Maintenance Budget has three line items: 1) **Annual Maintenance**, 2) **Deferred Maintenance**, and 3) **Equipment Repair and Replacement**. As previously described, funding allocated to NFHS maintenance provides for routine maintenance activities and repairs, rehabilitation of significant deferred maintenance needs, and equipment replacement and repair to ensure that facilities are safe and that operations comply with Federal, Tribal, State and local regulations and guidelines.

**Annual Maintenance** – NFHS annual preventive maintenance funds are used to pay salaries of maintenance employees, ensure timely repairs of hatchery facilities and equipment, and purchase maintenance supplies (lumber, pipe, paint, tools, air and oil filters, etc.), thus avoiding adding additional projects to the deferred maintenance backlog and needing to replace equipment in an untimely manner. It funds salaries, supplies, materials and contracts during the year in which the deficiency occurs, and small equipment replacement (generally less than \$5,000 - lawn mowers, etc.). Properly managed, annual preventive maintenance is a logical approach to maintenance needs as they occur, and is very cost effective. For example, changing the oil or other fluids, and replacing filters on motors on a timely basis will extend the useable life of all vehicles and equipment. Similarly, repairing roofs deteriorated by age and elements or from severe storm events is much less costly than incurring the expenses associated with water damage from leaking roofs.

The NFHS has extensive annual, preventive maintenance needs that have remained largely unfunded. The need to address maintenance needs as they become evident, rather than roll to the deferred maintenance backlog, is one of the focus areas that the IG's highlighted in its previously cited advisory report. The NFHS endorses this proactive approach to maintenance management and has sought to highlight these needs via planning documents and the budget process. The FY 2005 Budget included a maintenance increase directly addressing annual maintenance specifics.

The NFHS has closely evaluated its operational and maintenance needs. After undertaking an exhaustive review of NFHS Maintenance Program, using Condition Assessment information and other analyses, the analysis revealed that annual maintenance funds support less than half of the NFHS's current annual maintenance needs, and employees supported by operations funds are required to perform annual maintenance in order to maintain hatchery operations. The NFHS has closely evaluated both the operational and maintenance needs of the System, and in FY 2005 received Congressional approval to reprogram deferred maintenance funds to support annual maintenance, thereby freeing up operational funding to help address operational priorities in the Fisheries Program's Strategic Plan and meet performance objectives from the PART. In the short term, the Service is looking for innovative ways to meet operational shortfalls. Addressing the program's deferred maintenance needs long-term continues to be a priority, and the Service will work with the Department, Administration and Congress to meet its deferred maintenance needs over time. Although this impacts the System's focus on reducing the deferred maintenance backlog, it does permit addressing already planned annual, preventive maintenance initiatives, and should help stabilize/improve the condition of NFHS facilities.

In FY 2005, with Congressional approval, the Service reprogrammed \$3,000,000 in the Hatchery Maintenance and Rehabilitation Program Element base, plus a \$1,000,000 increase, from the deferred maintenance account to the annual maintenance account to help address operational shortfalls in the Fisheries Program. Presently, a majority of hatchery maintenance employees are paid out of operations accounts, rather than annual maintenance, because of budgetary constraints. This approved reprogramming will permit Facility Managers to better, if not fully, address day to day maintenance needs on their stations.

**Deferred Maintenance** – Deferred maintenance funding is directed to the repair, rehabilitation, or replacement of constructed assets. The NFHS's mission accomplishments are largely determined by the condition of the core assets associated with water delivery, aquatic species culture, and effluent management. Maintaining these mission critical water management assets in good condition is essential for the NFHS to meet its aquatic resource mission while complying with national environmental standards. These assets include those that directly influence the quantity and/or quality of water delivered to and discharged from the facility, or that comprise and regulate the actual rearing or holding environment of fish or other aquatic species.

Projects planned for implementation in FY 2006 from the five-year deferred maintenance plan will continue to target the NFHS's mission critical water management assets; i.e. its water supplies, water treatment, and propagation facilities. For example, the rehabilitation of failing water lines at Lahontan NFH (NV) is necessary to meet recovery goals for threatened Lahontan cutthroat trout. The repair of crumbling raceways at Allegheny NFH (PA) will improve rearing conditions and reduce the risk of disease transmission for the lake trout restoration program, and also alleviate safety concerns to both station staff and the visiting public.

All projects are identified and tracked in Service Maintenance databases and are prioritized for funding in the NFHS's **Five-Year Maintenance Management Plan**. Consistent with DOI guidance, projects are ranked and scored depending on how they address the following criteria: 1) critical health and safety, 2) critical resource protection, 3) critical mission, and 4) other important needs. Additionally, Station and Regional Rankings of MMS projects are considered along with DOI Scores when prioritizing projects for the Five-Year MMS Plan.

Keeping NFHS mission critical water management assets in the best condition as a System focus supports DOI's Resource Protection Goal of Sustaining Biological Communities as both water quantity and quality are critical elements in sustaining biological communities. Pending final condition assessment data, critical water management assets are estimated to comprise \$771 million of the NFHS's \$1.07 billion in asset replacement value.

**Equipment: Routine Maintenance, Repair and Replacement** – NFHS equipment is essential to mission accomplishment and is comprised of machinery (tractors, loaders, backhoes, riding mowers, etc.), fish transports (trucks, tanks, oxygen containment), standard vehicles (pickups, sedans, vans, etc.), and tools (table saws, welders, and hand-held power tools), as examples. All equipment has a useful life and should not be replaced until that piece of equipment has achieved or exceeded its' useful life. With proper operation by trained and qualified operators, and with scheduled maintenance completed and documented on a timely basis, equipment will remain useable for a long time. Proper maintenance of equipment includes short and long-term storage. Expensive equipment should be properly stored to protect it from the elements, particularly the damaging effect of sun on tires and pressure hoses, and from potential vandalism whenever possible.

The NFHS equipment funding lines is intended to fund maintenance, repair and replacement. Replacement generally targets those equipment items with a value greater than \$5,000 and less than \$30,000 and passenger-carrying vehicles. Because of budgetary limitations within the equipment fund, more expensive equipment is identified for purchase through the Five-Year MMS Plan. To avoid the need to purchase high dollar, specialized equipment, the NFHS works closely with the NWRS to accomplish projects requiring specialized needs. In the event such arrangements cannot be accommodated because of scheduled equipment usage, specialized equipment is leased from the private sector and Refuge based Equipment Operators are "loaned" to hatcheries for the duration of the project.

#### **2004 Program Performance Accomplishments**

The NFHS focused resources on deferred maintenance associated with mission critical assets. FY 2004 accomplishments include:

- Replaced the electrical wiring in the office and visitors center at Greers Ferry NFH (AR), which did not meet local building codes and presented electrical shock risks to staff and the public.
- Completed 19 (25% over the annual target) additional comprehensive condition assessments, for a total of 78% completed (62% targeted). The FY 2004 target was surpassed as results of efficiency from standardizing assessment techniques and experience gained from prior year's assessments. FY 2004 performance in this area positions the NFHS to meet its goal of 100% (all 77 facilities assessed) by the end of FY 2005, completing the first five-year cycle of comprehensive condition assessments.
- Improved the water quality and fish rearing capacity at Williams Creek NFH (AZ) by rehabilitating hatchery oxygenation systems and adding a UV treatment system and support structure for the tank house water supply. Service restoration efforts for the threatened Apache trout were vastly improved by sustaining fish health and production programs. This hatchery lost over 300,000 fingerling Apache trout in 2002 due to a bacterial gill epizootic precipitated by the FDA's withdrawal of the use of the therapeutant Chloramine-T.

- Improved work and fish rearing conditions at Edenton NFH (NC) through the replacement of 38 corroded pond drain valves. This station's brackish water supply corrodes metal valves, resulting in inoperable and leaking drain valves that impact restoration programs for striped bass and American shad and cause back strain for staff assigned to operate the valves. Valve replacements will enable the station to meet fishery management plan expectations while minimizing staff safety risks.
- Facilitated restoration of imperiled paddlefish and pallid sturgeon at Gavins Point NFH (SD) through the replacement of 15 pond kettles that deteriorated to a point they had become a safety hazard for employees and no longer function properly as fish catchment devices or critical water level control structures.
- Increased water quantity and quality at Harrison Lake NFH (VA) by repairing an inoperable well critical to supplying clean water for the recovery of Atlantic sturgeon and propagation of recreational fish species such as striped bass, American shad, and river herring.
- Initiated improvements in the quality of the water supply at Pendills Creek NFH (MI) through rehabilitation of the water intake and filtration systems to remove sediment the dated system could not handle. This project reduced the incidence of bacterial gill disease which had seriously affected the hatchery's lake trout rearing program. The greatly improved water quality and rearing conditions will contribute significantly to the ability of the Service to meet U. S. v. Michigan Consent Decree expectations for improved lake trout production.
- Replaced baffles and orifices in the four fish ladders at the Marble Bluff Fish Research and Control Station (NV) and removed sand and debris from the facility's fishway entrance in upper Pyramid Lake and the entire 3.1 mile length of the fish passage channel. These improvements improved conditions for movement of threatened Lahontan cutthroat trout and endangered Qui-ui sucker from Pyramid Lake to historical spawning grounds in the Truckee River blocked by Marble Bluff Dam.

### 2005 Planned Program Performance

In FY 2005, the NFHS will continue its focused support on the DOI's Strategic Goal of Resource Protection to Sustain Biological Communities to Manage Populations to Self-sustaining Levels for Specific Species. Significant projects planned for FY 2005 include:

- Ensuring the safety of employees, visitors, and volunteers at NFHS facilities by completing maintenance projects involving safety issues, such as the rehabilitating the formalin transfer systems used in disease treatments for fish eggs at Lamar NFH and Northeast Fishery Center (PA), Carson NFH (WA) and Quilcene NFH (WA). Current systems do not meet OSHA and Service safety standards and presents health risks to staff and volunteers.
- Finishing the first 5-year cycle of comprehensive condition assessments (CCA) by completing CCA's at the remaining 17 hatcheries utilizing Washington/Regional office personnel and consultants. Additionally, efforts will be made to improve the assessment program by incorporating data into SAMMS, improving the efficiency of the information system, and increasing the reliability of data used to effectively and efficiently meet DOI and NFHS maintenance goals and objectives.

- Implementing a comprehensive maintenance management program at all NFHS field stations by the end of FY 2005. Full implementation of SAMMS for facilities management will allow documenting, planning, and tracking annual and deferred maintenance needs and scheduling periodic component renewal needs. This system will provide more accurate and credible short and long-term maintenance management and reporting.
- Improving water conservation efforts at Jackson NFH (WY) through rehabilitation of the water reuse system's filtration and oxygenation systems. The improved water quality will contribute significantly to healthier fish available to meet the Service's mission as well as reducing water consumption and water pumping costs.
- During FY 2005 the Service will use the condition assessment process to document asset maintenance and repair needs, estimate repair costs using the Recommended Standard (RS) Means cost estimating tools, and incorporate these needs into the 5-year planning process. All work will be accomplished with the Service Assessment and Maintenance Management System (SAMMS), based on the DOI-standard software (MAXIMO).
- Facilitating restoration and recovery efforts at Lahontan NFH (NV) and White River NFH (VT) by rehabilitating malfunctioning, obsolete water monitoring alarm systems. Recovery for endangered Lahontan cutthroat trout and Atlantic salmon will be augmented by ensuring critical monitoring of dependable flows of quality water.
- Improving work and fish rearing conditions at Inks Dam NFH (TX) through the replacement of deteriorated water line valves. The existing units have corroded, leading to leaking and/or stuck drain valves that impact restoration programs for striped bass and paddlefish and 13 Native American Tribal partners. The valves also cause back strain for staff assigned to operate them. Valve replacements will enable the station to meet fishery management plan expectations while minimizing staff safety risks.
- Increasing paddlefish and lake sturgeon at the Private John Allen NFH (MS) from the current 20,000 fish per year to 50,000 fish per year for each species in FY 2005. This increased production will greatly accelerate recovery of the two species and will be accomplished by improving the spawning and rearing facilities at the hatchery by adding a "state of the art" recirculating, intensive culture system, complete with anti-escapement devices and a cooling system. The upgraded culture system will allow the hatchery to spawn and rear higher densities of fish in a more controlled environment. The addition of a cooling unit will permit holding ambient temperature of the individual culture units at optimal levels for each species. This will result in a cost savings over the current method of cooling and recirculating water with chiller units.

### Justification of 2006 Program Changes

Subactivity		2006 Budget Request	Program Changes (+/-)
Hatchery Maintenance	\$(000)	16,980	-2,120
	FTE	0	0

The FY 2006 Budget Request for Hatchery Maintenance and Rehabilitation is \$16,980,000 and 0 FTE, a net program decrease of \$2,120,000 including a \$62,000 vehicle reduction and 0 FTE from the FY 2005 enacted level. With these funds, the Program will help accomplish the Department's Strategic Plan goals for maintenance and asset management.

In FY 2005, Congress approved reprogramming of \$4,000,000 from deferred maintenance to annual maintenance to address Fisheries Program operational shortfalls. This reprogramming will permit facility managers to better, if not fully, address day to day maintenance needs on their stations, which in turn supports priorities captured in the DOI's Resource Protection Goals: to Sustain Biological Communities on DOI Managed and Influenced Lands and Waters in a Manner Consistent with Obligations Regarding the Allocation and Use of Water; and, to Improve Health of Watersheds, Landscapes, and Marine Resources that are Managed or Influenced in a Manner Consistent with Obligations Regarding the Allocation and Use of Water.

In the short term, the FY 2005 reprogramming of \$4 million of the NFHS's deferred maintenance funds to annual maintenance will delay planned progress in addressing projects identified and prioritized in the NFHS's Five-Year Deferred Maintenance Plan. Nonetheless, improving the Facility Condition Index of its stations by reducing the deferred maintenance backlog remains a priority for the NFHS.

#### **Annual Maintenance (+\$268,000)**

A review of the NFHS Maintenance Program revealed that annual maintenance funds support less than half of the NFHS's current annual maintenance needs, and employees supported by operations funds are required to perform annual maintenance in order to maintain hatchery operations. In FY 2005, Congress approved reprogramming of deferred maintenance funds to support annual maintenance. Properly managed, annual preventive maintenance is a cost-effective, logical approach to dealing with problems before they occur. Consistent with guidance from the Congress, an Inspector General's report, and the Department's recommendations to "manage facilities proactively," the Service will focus on repair needs as they occur rather than allow them to grow and become large, deferred maintenance projects.

The fiscal year 2005 Omnibus Appropriations Act ( P.L. 108-447) included two across the board rescissions, netting a 1.3 percent reduction to all Service programs. An increase of \$268,000 will restore funding and allow the Service to maintain performance and base program capability. These funds will fund service agreements to keep pumps, wells, alarms, and backup electrical systems fully operational as an efficient way to prevent the deterioration of major water support systems. As the NFHS improves its ability to use information generated by systematic condition assessments and more fully tracks and schedules asset servicing and repair needs through SAMMS, these preventive maintenance funds should result in large, long-term payoffs and less need for deferred maintenance.

#### **Deferred Maintenance (+\$120,000)**

The fiscal year 2005 Omnibus Appropriations Act ( P.L. 108-447) included two across the board rescissions, netting a 1.3 percent reduction to all Service programs. An increase of \$120,000 will restore funding and allow the Service to maintain performance and base program capability. These funds will be targeted to maintaining mission critical water management assets, i.e., water supplies, water treatment, and propagation facilities. Pending final condition assessment data, these critical water management assets are estimated to comprise \$771 million of the NFHS's \$1.07 billion replacement value. The increase will be applied to projects identified in the Five-Year Deferred Maintenance Plan. Examples of the types of projects in the Plan are rehabilitation of failing water lines at Lahontan NFH (NV) to meet recovery goals for threatened Lahontan cutthroat trout, and the repair of crumbling raceways at Allegheny NFH (PA) to reduce the risk of disease transmission for the lake trout restoration program.

#### **Equipment Replacement (+\$19,000)**

The fiscal year 2005 Omnibus Appropriations Act ( P.L. 108-447) included two across the board rescissions, netting a 1.3 percent reduction to all Service programs. An increase of \$19,000 will

restore funding to the 2004 enacted level and will allow the Service to maintain performance and base program capability. These funds will be utilized for repairs and replacement for the vast array of equipment required by the NFHS to meet its mission, including machinery (tractors, loaders, backhoes, riding mowers, etc.), fish transports (trucks, tanks, oxygen containment), standard vehicles (pickups, sedans, vans, etc.), and tools (table saws, welders, and hand-held power tools), as examples.

**Vehicle Reduction (-\$62,000)**

The 2006 budget proposes a reduction of -\$62,000 in the Hatchery Maintenance Program to recognize expected savings to be achieved through improved fleet management within the Service and across the Department of the Interior.

**Washington State Hatchery Improvement Project (-\$2,465,000)**

In FY 2005, Congress provided funding for the Washington State Hatchery Improvement Project, to be used by the Washington State hatchery system, the Long Live the Kings project, the Northwest Indian Fisheries Commission, and the Service to initiate State-led salmon and steelhead hatchery reform in Puget Sound and the Washington State marine coast. Funding for this program is eliminated in FY 2006 to offset increases elsewhere in the President's budget request that are necessary to address higher priority needs. This funding reduction is consistent with the Draft Fisheries Program's National Strategic Plan, which focuses the Program's limited resources on mission-critical activities that can be undertaken using Service facilities and personnel. In FY 2006, the NFHS will focus its efforts on Pacific Northwest Salmon Conservation activities to improve fish propagation strategies for 12 species of hatchery-raised salmon and steelhead in the Columbia River Basin.

**Program Performance Summary**

The National Fish Hatchery System is fully committed to implementing the Department's Strategic Plan in FY 2006. The NFHS has continued development of outcome measures and modification of other long-term measures to accurately describe its contributions to the DOI End and Intermediate Outcome Goals. In FY 2006, performance measures may be further refined after review and recommendations by OMB and the Sport Fishing & Boating Partnership Council. In addition, a new performance measure workgroup will be instituted to develop recommendations on definitions and measures.

Performance measure targets identified with an asterisk (\*) note the use of an earlier method of estimation. In some cases, no historical accomplishment information was collected related to these performance measures, and therefore, no performance targets are available for FY 2003 and FY 2004. In FY 2004, actual accomplishments were reported, and baseline conditions for these performance measures were verified for use in establishing FY 2005 and FY 2006 performance targets.

<b>DOI Strategic Goal: Resource Protection</b>							
<b>End Outcome Goal 1.1: Improve Health of Watersheds, Landscapes and Marine Resources that are DOI Managed or Influenced in a Manner Consistent with Obligations Regarding the Allocation and Use of Water</b>							
<b>End Outcome Measure:</b> <i>Water Quality:</i> % of surface waters managed by DOI that meet State (EPA approved) Water Quality Standards							
<b>Intermediate Outcome:</b> Restore and maintain proper function to watersheds and landscapes							
<b>Intermediate Outcome Measures (Key and Non-Key) and PART Outcome Measures</b>	<b>FY 2003 Actual</b>	<b>FY 2004 Actual</b>	<b>FY 2005 Budget</b>	<b>FY 2005 Plan</b>	<b>FY 2006 Plan</b>	<b>Change in Performance - 2005 to Planned 2006</b>	<b>Long-term Target (2008)</b>
% of NFHS stations that meet environmental requirements for effluent as defined by Federal, Tribal, and State law. (BUR)	97% 60/62*	94% 83/88	94% 83/88	94% 83/88	95% 84/88	+1% +1	95% 84/88
<b>End Outcome Goal 1.2: Sustain Biological Communities on DOI Managed and Influenced Lands and Waters in a Manner Consistent with Obligations Regarding the Allocation and Use of Water</b>							
<b>End Outcome Measures:</b>							
<ul style="list-style-type: none"> <li>- % of species of management concern that are managed to self-sustaining levels, in cooperation with affected States and others, as defined in approved management documents</li> <li>- % of threatened or endangered species listed a decade or more that are stabilized or improved</li> <li>- % of candidate species where listing is unnecessary as a result of conservation actions or agreements</li> </ul>							
<b>Intermediate Outcome:</b> Manage populations to self-sustaining levels for specific species							
<b>Intermediate Outcome Measures (Key and Non-Key) and PART Outcome Measures</b>	<b>FY 2003 Actual</b>	<b>FY 2004 Actual</b>	<b>FY 2005 Budget</b>	<b>FY 2005 Plan</b>	<b>FY 2006 Plan</b>	<b>Change in Performance - 2005 to Planned 2006</b>	<b>Long-term Target (2008)</b>
% of Recovery Plan production tasks implemented (PART) (a)	40% 48/121*	78% 62/80	79% 63/80	79% 63/80	85% 68/80	+6% +5	85% 68/80
% of Fishery Management Plan production tasks implemented (PART) (b)	85% 97/114*	91% 276/303	92% 278/303	92% 278/303	92% 279/303	0% +1	92% 279/303
% of applied science and technology tasks implemented as prescribed by Recovery Plans (BUR) (a)	53% 98/180*	50% 51/101	54% 54/101	54% 54/101	66% 67/101	+12% +13	66% 67/101
% of applied science and technology tasks implemented as prescribed by Fishery Management Plans (BUR) (b)	87% 74/85*	47% 96/206	50% 103/206	50% 103/206	54% 111/206	+4% +8	54% 111/206



% of threatened or endangered populations, prescribed as necessary in Recovery Plans, that become self-sustaining in the wild. <b>(PART)</b>	N/A	15% 67/461	15% 67/461	15% 67/461	15% 67/461	0	15% 67/461
# of fish and aquatic animal populations that are held in refugia <b>(BUR)</b>	45	72	72	72	75	+3	75
% of post-stocking survival targets met, as prescribed by Recovery Plans, for hatchery propagated listed species. <b>(PART) (c)</b>	UNK	21% 3/14	21% 3/14	21% 3/14	21% 3/14	0	21% 3/14
% of post-stocking survival targets met, as prescribed by Fishery Management Plans, for hatchery propagated depleted species. <b>(PART) (c)</b>	50% 2/4*	48% 41/86	48% 41/86	48% 41/86	48% 41/86	0	48% 41/86
% of marking and tagging targets met, as prescribed by approved management plans. <b>(BUR) (b)</b>	UNK	54% 82/153	54% 83/153	54% 83/153	58% 88/153	+4% +5	58% 88/153
Condition of mission critical water management assets as measured by the DOI FCI. <b>(PART)</b>	UNK	0.19	0.19	0.19	0.19	0	0.19
Condition of assets directly supporting infrastructure (maintenance and administrative buildings; safety and storage properties) as measured by the DOI FCI. <b>(BUR)</b>	UNK	UNK	UNK	UNK	UNK	UNK	UNK
% of NFHS stations scheduled for Condition Assessments on a 5-year cycle basis that have had those assessments completed <b>(BUR)</b>	52% 41/79*	95% 19/20	95% 19/20	95% 19/20	95% 19/20	0	95% 19/20
<b>Intermediate Outcome:</b> Improve information base, information management and technical assistance							
<b>Intermediate Outcome Measures (Key and Non-Key) and PART Outcome Measures</b>	<b>FY 2003 Actual</b>	<b>FY 2004 Actual</b>	<b>FY 2005 Budget</b>	<b>FY 2005 Plan</b>	<b>FY 2006 Plan</b>	<b>Change in Performance - 2005 to Planned 2006</b>	<b>Long- term Target (2008)</b>

# of applied aquatic scientific and technologic tools shared with partners (BUR)	UNK	222	222	222	231	+9	231
# of technical sections of new animal drug applications submitted for fish and aquatic populations (BUR)	UNK	58	58	58	59	+1	59
# of techniques and culture technology tools developed (BUR)	UNK	211	211	211	228	+17	228
% DOI watershed units with current wild fish health surveys (PART)	20% 435/2150	25% 532/2111	25% 532/2111	25% 532/2111	25% 533/2111	0% +1	25% 533/211 1
<b>End Outcome Goal 1.3: Protect Cultural and Natural Heritage Resources</b>							
<b>End Outcome Measures</b>	<b>FY 2003 Actual</b>	<b>FY 2004 Actual</b>	<b>FY 2005 Budget</b>	<b>FY 2005 Plan</b>	<b>FY 2006 Plan</b>	<b>Change in Performance - 2005 to Planned 2006</b>	<b>Long-term Target (2008)</b>
% of cultural properties on DOI inventory in good condition (SP)	UNK	TBD	TBD	TBD	TBD	TBD	TBD
<b>Intermediate Outcome: Increase partnerships, volunteer opportunities, and stakeholder satisfaction</b>							
<b>Intermediate Outcome Measures (Key and Non-Key) and PART Outcome Measures</b>	<b>FY 2003 Actual</b>	<b>FY 2004 Actual</b>	<b>FY 2005 Budget</b>	<b>FY 2005 Plan</b>	<b>FY 2006 Plan</b>	<b>Change in Performance - 2005 to Planned 2006</b>	<b>Long-term Target (2008)</b>
# of volunteer participation hours (BUR)	100,762	102,208	102,208	102,208	102,208	0	102,208
# of Friends Groups (BUR)	14	15	15	15	15	0	15
<b>DOI Strategic Goal: Recreation</b>							
<b>End Outcome Goal 3.1: Provide for a Quality Recreation Experience, including Access, and Enjoyment of Natural and Cultural Resources on DOI Managed and Partnered Lands and Waters</b>							
<b>End Outcome Measure: Satisfaction with quality of experience</b>							
<b>Intermediate Outcome: Enhance the Quality of Recreation Opportunities</b>							
<b>Intermediate Outcome Measures (Key and Non-Key) and PART Outcome Measures</b>	<b>FY 2003 Actual</b>	<b>FY 2004 Actual</b>	<b>FY 2005 Budget</b>	<b>FY 2005 Plan</b>	<b>FY 2006 Plan</b>	<b>Change in Performance - 2005 to Planned 2006</b>	<b>Long-term Target (2008)</b>

Condition of public use assets as measured by the DOI FCL (BUR)	UNK	TBD	TBD	TBD	TBD	TBD	TBD
% of mitigation production programs fulfilled (PART)	UNK	42% 11/26	42% 11/26	42% 11/26	42% 11/26	0	42% 11/26
<b>PART Efficiency Measure</b>	<b>FY 2003 Actual</b>	<b>FY 2004 Actual</b>	<b>FY 2005 Budget</b>	<b>FY 2005 Plan</b>	<b>FY 2006 Plan</b>	<b>Change in Performance - 2005 to Planned 2006</b>	<b>Long-term Target (2008)</b>
Lbs/\$ of healthy rainbow trout as an efficiency measure for recreation (PART)	N/A	0.37lb/\$1	0.37lb/\$1	0.37lb/\$1	0.37lb/\$1	0	.37lb/\$1
<b>Intermediate Outcome: Provide Effective Interpretation and Education Programs</b>							
<b>Intermediate Outcome Measures (Key and Non-Key) and PART Outcome Measures</b>	<b>FY 2003 Actual</b>	<b>FY 2004 Actual</b>	<b>FY 2005 Budget</b>	<b>FY 2005 Plan</b>	<b>FY 2006 Plan</b>	<b>Change in Performance - 2005 to Planned 2006</b>	<b>Long-term Target (2008)</b>
# of visitors to NFHS facilities. (BUR)	1,869,868	1,662,648	1,662,648	1,662,648	1,662,648	0	1,662,648
<b>DOI Strategic Goal: Serving Communities</b>							
<b>End Outcome Goal 4.4: Advance quality communities for Tribes and Alaska Natives</b>							
<b>Intermediate Outcome: Promote Indian and Alaska native Self-Governance and Self-Determination</b>							
<b>Intermediate Outcome Measures (Key and Non-Key) and PART Outcome Measures</b>	<b>FY 2003 Actual</b>	<b>FY 2004 Actual</b>	<b>FY 2005 Budget</b>	<b>FY 2005 Plan</b>	<b>FY 2006 Plan</b>	<b>Change in Performance - 2005 to Planned 2006</b>	<b>Long-term Target (2008)</b>
% of agreements fulfilled for Tribal Trust responsibilities (BUR)	UNK	74% 58/78	74% 58/78	74% 58/78	74% 58/78	0	74% 58/78

- (a) The data collected for these two measures equal the performance target for the PART measure: % of NFHS priority recovery tasks implemented as prescribed in approved Recovery Plans. ;2003 Actual = 146/301 or 48.5%; 2004 Actual = 113/181 or 62%; 2005 Budget = 117/181 or 65%; 2005 Plan = 117/181 or 65%; 2006 Plan = 135/181 or 75%; 2008 Long-term = 135/181 or 75%
- (b) The data collected for these three measures equal the performance target for the PART measure: % of NFHS priority restoration tasks implemented as prescribed in approved Fishery Management Plans; 2003 Actual 171/199 or 86%; 2004 Actual = 454/662 or 69%; 2005 Budget = 464/662 or 70%; 2005 Plan = 464/662 or 70%; 2006 Plan = 478/662 or 72%; 2008 Long-term = 478/662 or 72%
- (c) The data collected for these two measures equal the performance target for the PART measure: % of survival targets, prescribed by approved management plans, met for hatchery stocks of imperiled species\*\*; 2003 Actual = 2/4 or 50%; 2004 Actual = 44/100 or 44%; 2005 Budget = 44/100 or 44%; 2005 Plan = 44/100 or 44%; 2006 Plan = 44/100 or 44%; 2008 Long-term = 44/100 or 44%. \*\*The numbers submitted in the PART/MITS submission only included the Fishery Management Plan portion.